Subject choice and student perceptions of A level courses

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Abstract

Despite a plethora of proposals and counter-proposals, the framework of the A level system has remained largely unchanged for forty years. This study reviews the historical context of sixth form education and provides an insight into students' perceptions of A level courses in the late 1980s. It also examines the reasons behind students' choices of subjects for study at A level and students' subsequent satisfaction with their chosen courses.

The variables which most strongly influenced students' choice of subjects for study were the subject's perceived interest value, previous success in the subject and its compatibility with other subjects chosen. Also important, in some subject areas, was the perceived career value of a subject and its necessity for higher education.

The students began their A level courses with very positive perceptions. The overwhelming majority view was of students' confidence in their ability to cope and high expectation of their courses. Unfortunately this initial positivism was not sustained. As students progressed through the course an increasing proportion reported that A level work was boring and became more sceptical about the utility of A levels. This growing disillusionment was probably partly responsible for some of the dissatisfaction evident in this study, gauged partly in terms of drop-out rates.

It is concluded that A levels in their present form do not seem to be meeting the needs of a proportion of those who are studying them.

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Abbreviations

AMA	Assistant Masters' Association
AS	Advanced Supplementary
ASI	Approaches to Studying Inventory
BTEC	Business and Technician Education Council
CCI	College Characteristics Index
CEE	Certificate of Extended Education
CNAA	Council for National Academic Awards
CPQ	Course Perceptions Questionnaire
CPVE	Certificate of Pre-Vocational Education
CTC	City Technology College
CUES	College and University Environment Scales
DES	Department of Education and Science
FE	Further Education
GCE	General Certificate of Education
GCSE	General Certificate of Secondary Education
HE	Higher Education
JMB	Joint Matriculation Board
LPQ	Learning Process Questionnaire
MSC	Manpower Services Commission
NCC	National Curriculum Council
RSA	Royal Society of Arts
SCUE	Standing Conference on University Entrance
SEQ	School Experience Questionnaire
SEU	Subjective Expected Utility
SFC	Sixth Form College
SSEC	Secondary School Examinations Council
TA	Training Agency
TES	Times Educational Supplement
TVEI	Technical and Vocational Education Initiative

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Chapter one

Introduction

1.1 Background to the study

The first examinations for the General Certificate of Education at Advanced level were held in 1951. The framework then established for the A level system of examining has remained fundamentally unchanged ever since. However, its passage has not been entirely smooth as there has been a plethora of proposals and counter proposals which have sought to reduce specialisation and broaden the scope of study in the sixth form. One of the most recent of these proposals, the Higginson Report (DES, 1988a), advocated broadening the traditional A level course by means of a five subject system. Although the Government accepted the principle of these recommendations, it did not accept the means, preferring instead to rely on the uptake of the new AS levels to achieve better breadth and balance in the sixth form curriculum.

The Government's commitment to the A level system has been evident in several public statements made by ministers prior to the publication of the Higginson Report. For example, the then Minister of State, Angela Rumbold, was reported to have said, *"They change A levels over my dead body"* (The Guardian, 18.8.87). The then Secretary of State, Kenneth Baker, made his position equally clear in a speech which referred to the commissioning of the Higginson Committee:

"In setting up the Committee we stressed our commitment to A levels... I have to say that I remain to be convinced that A levels as part of our examinations system need major change... I start from where we are. A levels are a key element of 16-19 provision... A and AS levels, taken together, provide sound building blocks for the future".

(Secretary of State for Education, 1987)

More recently, John MacGregor has confirmed the stance of his predecessor by saying, "*A levels are, and will remain the principle route to higher education*". However, he also acknowledged some of the deficiencies in the A level system by making reference to the one third of students with A levels who go directly into work, and also to those who fail (Secretary of State for Education, 1990).

Despite the Government's stated commitment to retaining A levels, recent changes in educational policy, concerning both pre- and post- A level education, suggest that events may perhaps be overtaking any need for radical reform.

The most important impetus for change was the introduction, in September 1986, of the GCSE, with its emphasis upon problem solving and heuristic methodology (Green, 1988). The widespread concern about the impact of GCSE on A levels is encapsulated in the words of Professor Shock, chairman of the Committee of Vice-Chancellors and Principals:

> *"The GCSE is proving to be the catalyst for change. It is not another examination, it is a whole new way of doing things. That is bound to have a knock-on effect. It is ludicrous for pupils who are studying the new syllabuses to be expected then to*

concentrate on A levels, whose entire basis is the old O level". (TES, 17.10.86)

More recently, the introduction of the national curriculum has added to the pressure for change. As Macfarlane (1990) points out, the national curriculum has resulted in the development of more flexible and imaginative approaches for assessment and recording at the pre-sixth form level, thus accelerating the movement towards reform of the 16-19 curriculum.

Beyond A level there has been mounting concern over the appropriateness of A levels for the growing proportion of students who are choosing to remain in full-time education beyond the age of sixteen. In particular there are doubts over the suitability of A levels for the substantial proportion of A level students who enter the labour market directly after A levels (Neather, 1988).

Even when students do aspire to higher education, A levels are no longer seen as the only route. A paper written by the secretary of the Standing Conference on University Entrance referred to the need of the universities to widen access in order to attract students holding qualifications other than A level, for example, European Baccalaureate, TVEI, BTEC and access courses taken by mature students (TES, 17.10.86). This theme was reiterated in a report by the Foundation for Science and Technology in 1987. Such policy changes suggest that the universities, like the polytechnics, are becoming committed

to viewing A levels as only one element in the pattern of qualification permissible for entrance to higher education.

In addition to the changes that have already taken place both below and above A levels, the A level system itself has not been entirely static. Since the summer of 1987 the grading system has been revised to overcome the problem of the narrow C band (Standing Conference on University Entrance, 1987), and since 1988 the Examination Boards have been examining many subjects in terms of common cores in an attempt to introduce greater comparability between boards (Neather, 1988). Also, in some schools and colleges the course choices available to A level students have been enhanced by the introduction of AS level syllabuses in 1987 and the extension of TVEI to include 16-18 year olds.

In addition to the above developments A level education has also seen major changes in terms of its institutional provision. From being wholly the preserve of the public and grammar schools in the 1950s, through the development of comprehensive sixth forms in the 1960s and 70s, A level provision has gradually expanded away from the schools to include the colleges; firstly the colleges of further education, then the sixth form colleges and finally the tertiary colleges. Although, in different parts of the country, A level education may be found in all of the above types of institutions, in many local authorities financial necessity has favoured separate provision of 16-19 education.

In 1990 the National Curriculum Council and the School Examinations and Assessment Council were given the task of developing a new set of principles to govern A level syllabuses and assessment. This latest attempt at reform shifted away from earlier proposals for the number of subjects studied to be increased, towards a more searching analysis of the nature of learning (Macfarlane, 1990). Thus the new set of proposals uses the term "core" to refer to **process** rather than **content**. The "core skills" to be developed include communication, enterprise, information technology and awareness of the cultures and language of our trading partners.

The consultation paper produced by SEAC in September 1990 proposes an increase in the amount of assessed coursework in A level syllabuses and steps up the development of modular courses. It also creates links and credit transfer with vocational qualifications and extends AS levels to broaden the sixth form curriculum. The report of the National Curriculum Council (1990) outlines a similar set of recommendations which were the consensus of a wide measure of agreement reached by a number of potentially influential bodies formally consulted by the NCC. These included Local Education Authorities, Colleges of Further and Higher Education, Business and Technician Education Council and the Training Agency. In view of the widespread support for these proposals it seems likely that movement towards implementation may not be far away.

In view of the climate of change, this project sets out to examine some aspects of A level education as it was perceived by students between 1986 and 1988. By so doing it is hoped that the study will add to the body of knowledge already available about subject choice, and will also provide a yardstick for future research into students' perceptions of academic courses at this level.

1.2 Objectives

The media attention accorded to A level education is often the consequence of the comments and/or debate of learned educationalists. However, despite the many changes that have already taken place, and others that may yet be imminent, scant attention has been paid to the views of the consumers in the A level market, namely the students themselves. This study attempts, in part, to redress the balance.

The objectives of this research project may be summarised as follows:

1) To review the historical context of A level education.
2) To investigate variables overtly influencing students' choice of subjects for study at A level.
3) To evaluate students' subsequent satisfaction with their chosen courses.
4) To examine students' perceptions of the academic experience provided at A level.

1.3 Overview

In order to fulfil the above objectives a number of research strategies were adopted. Whilst the historical component was fulfilled by means of a thorough literature search, the investigative part of the project required the development of an appropriate set of instruments. These were administered, over two years, to an initial cohort of one thousand five hundred and sixty-nine students, distributed between twenty-six different institutions, who started full-time A level courses in September 1986. Much of the resulting data was analysed in terms of institution type, gender, subject specialisation and academic ability. The raw data is available from the author on request.

Chapter two

The history of sixth form education

2.1 Introduction

This chapter traces the development of sixth form education from the early nineteenth century to today, and sets the scene for later discussion of subject choice and student perspectives on A level education in schools.

In this study seven hundred and two students were following full-time A level courses in the sixth forms of schools. This represents 44.7% of the students who participated in this project. These sixth formers were unevenly distributed between sixteen schools, some with very small sixth forms, others with substantial numbers of A level students. All but three of the schools had co-educational sixth forms. Two were boarding schools, two were grammar schools, and the remaining twelve were comprehensives.

2.2 The origins of the sixth form

The English sixth form has its roots in the public schools of the early nineteenth century. These were originally boarding schools catering exclusively for boys, initially from the upper classes, but later also from the rising middle classes. The idea of the sixth form was one aspect of the widespread structural reform of public school education which was taking place at the time. The creation of this bastion of English education is often

associated with Thomas Arnold of Rugby, who took advantage of the natural independence of the older boys, "*turning them from rebel leaders into junior officers*" and so curbing the disorder common before this time (Edwards, 1970). However, Arnold's ideas and methods were not unique; several of the 'great' public schools developed sixth forms during this period.

Although the sixth form was integrated and institutionalised within the concept of the school as a community, at the same time it was separated by its status and curriculum (Reid and Filby, 1982). Status separation resulted from the development of the prefectorial system where sixth formers were used as assistants in organising and disciplining younger boys. Curriculum separation arose because entry to "the sixth" was decided on grounds of academic achievement with boys concentrating on a few chosen subjects, selected from the predominantly classical curriculum.

Sixth form teaching was generally conducted in small groups, often by headmasters who were themselves exceptional scholars. The classics were deemed highly appropriate for the purpose of public school education, namely the initiation of boys into the role of the 'gentleman'. Latin and Greek were regarded as being suitable for several reasons: they not only provided a familiarity with shared topics and terminology, but also communicated the sense of rootedness in past culture

necessary to all elites. In addition they presented issues related to morals and character, and, in the minds of educated people were intimately connected with established religion (Reid and Filby, 1982). In the face of such fierce competition it is not surprising that other subjects were frequently regarded with suspicion or contempt. Thus in the 1830s mathematics occupied only a small portion of the sixth-former's time at Rugby, and science depended on occasional visits from a peripatetic teacher (Reid and Filby, 1982). At Uppingham, a quarter of a century later, Thring still defended education in "*one noble subject*", the classics, against the threat posed by science and modern languages which he regarded as the "*extra subjects*" (Thring, 1864).

Disregarding the subjects studied, the overriding concern of the public schools was to produce Christian gentlemen capable of social, political and military leadership. It was widely believed that these skills could best be learned through the setting of examples (Clarendon Commission, 1864). The hierarchical structure of the schools was well suited to this form of character development, being regularly reinforced with rituals of initiation and the public celebration of statuses whenever an audience of boys was assembled. The clear demarcation of boundaries had the effect of producing in sixth formers

> *"a sense of shared, progressive experience intimately linked to particular places, people and events which ensured that a bond of sympathy between them lasted throughout their lives."*
>
> (Reid and Filby, 1982)

The return of old prefects to their schools for occasional sporting, social and academic events provided models to which the boys could themselves aspire.

By the mid nineteenth century the public schools had become very prosperous and successful. Their character was exposed for all to see through stories of Tom Brown, Flashman and their contemporaries (Hughes, 1857). Via this medium the public schools became a meaningful concept to thousands of middle class children and the minority of working class children who were able to read. Although the creation and institutionalization of the public school had taken place in a remarkably short span of time, from the 1830s to the 1860s, in that period it had achieved a very real existence, much admired by the newly emergent middle classes, and emulated by the new or refounded public schools which sprang up to meet their needs.

The new public schools were established to provide education for the sons of gentlemen. Most were built in rural areas, not only for economic reasons, but also to protect the pupils from the temptations of town (King, 1976). The school was perceived as a community which, with its tight control on pupil activities and emphasis on conformity, was well suited to its role in developing the qualities essential to pupils' future careers in the Civil Service or as officers in the army. Inevitably the sixth form was instrumental in promulgating the democratic

ideal; these older boys functioning as a scholarly class of leaders and administrators.

2.3 State involvement

Outside the public schools, secondary education was provided by a haphazard, uncoordinated collection of endowed and proprietary schools, with sixth form education being available only to the sons of the middle classes. This is clearly expressed by the Schools Inquiry Commission (1868) which was set up to examine the workings of the secondary schools. Their final Report recommended the establishment of three grades of secondary education, corresponding roughly to separate grades of society, and carefully differentiated in terms of the leaving age of the pupils and the occupations of their parents. In the absence of a State funded system, the choice of school would inevitably be very much circumscribed by income. It was envisaged that only schools of the first grade would provide education beyond the age of sixteen. Such schools being used by ...

> *"men with considerable incomes independent of their own exertions"...* and *... "the great body of professional men, especially the clergy, medical men and lawyers"...* who *... "have nothing to look to but education to keep their sons on a high social level".*
> (Report of the Schools Inquiry Commission, 1868, Vol. I, p. 20)

The organisation and implementation of the Taunton scheme was left to the Charity Commission which, over the rest of the century, tackled the problem of rationalising

the existing educational endowments in an attempt to ensure that funds were fairly distributed. To some extent the position was complicated by the emergence of the local school boards after the Education Act of 1870. Although these were intended to administer only elementary education, it was not long before some of the larger city boards extended their work, so forming 'higher grade schools' which to some extent overlapped the provisions made by the secondary schools. However, their development in this direction was in most cases severely restricted by the system of 'payment by results' which provided financial reward only for the basic skills of reading, writing and arithmetic, in addition to attendance.

The notion of dividing the secondary schools into grades was reinforced by the Bryce Commission of 1895. While the first grade schools would take responsibility for the formation of a professional or cultural class whose school life continued until the age of eighteen or nineteen; the second grade would provide education appropriate for commercial or industrial life, with most pupils entering the world of work at age sixteen (Bryce Report, 1895). Thus sixth form education remained essentially a middle class affair. It was not anticipated that the children of the working classes would desire anything more than an elementary education, and indeed few remained in any form of education beyond the age of fourteen.

However, by the turn of the century there was gathering momentum for the idea that education could be used as a tool for social mobility. In the words of Aldous Huxley, there might be an 'educational ladder' which reached from the gutter to the university and so to the more highly esteemed occupations normally reserved for the children of the middle classes. This notion meant that the terms of the 1902 Act were welcomed as a means of increasing the provision of education other than elementary. In practice, much was left to the initiative of the county and county borough councils. They could either build new secondary schools of their own, or aid the endowed schools in their area. Thus while there was plenty of scope for energetic authorities, the Act gave little power to compel the laggards (Edwards, 1970).

The expansion of secondary education provided a broader base from which the sixth form could grow. In 1907 the Free Place Regulations encouraged this growth by restricting aid from public funds to those grammar schools which made themselves "*accessible to all classes*" by taking 25 per cent of their intake from elementary schools. Initially there were fears that standards would fall, but by 1910 there was widespread recognition that the free-placers could hold their own with the fee-payers. Indeed there was a tendency for the free-placers to stay longer at school. This development led Banks (1955) to describe them as "*the backbone of the developing Sixth Forms*".

During the early years of the implementation of the 1902 Act, the public schools retained their supremacy in terms of sixth form size. However, by the end of the first decade it was the state supported grammar schools that dominated the sixth form scene (Reid and Filby, 1982). Despite their numerical superiority, the blueprint for future development was predetermined by the curriculum pattern and hierarchical democratic tradition established by the public schools. These were perpetuated by the direct influence of the products of the public school sixth forms who now served as headmaster and teachers in the new schools. The importance of this influence was clearly emphasised by Norwood (1909) who urged school governors to ...

> *"try to introduce the public school tradition into a new element which badly needs it, by appointing for some time to come an old public school man as headmaster when the post falls vacant, paying him liberally, and giving him a free hand, with teaching and leading, not clerking, as his function".*
>
> (Norwood and Hope, 1909, p.185)

Such intervention meant that, initially, very little change took place in the nature of the sixth form as an institutional category.

2.4 Growth of the sixth form

Between 1914 and 1920 the expansion in provision of secondary places was accompanied by a doubling of numbers in the sixteen plus group (Tawney, 1922). However, despite such apparently rapid growth, less than two per cent of the age cohort of sixteen to seventeen year olds,

and less than one per cent of seventeen to eighteen year olds, were represented in the sixth forms of grant-aided secondary schools (Tawney, 1922). There was a widespread reluctance to prolong schooling beyond the minimum school leaving age of fourteen. In the absence of maintenance allowances beyond the statutory leaving age, the financial pressures for many families were too great a burden to bear.

During the late 1920s the proportion staying on into the sixth form rose to an artificially high level because of the Depression. As employment prospects improved in the 1930s, the proportion of boys and girls staying on dropped sharply. Despite the post-war bulge in the birth rate, the number of students in sixth forms increased only marginally. Thus, in most schools, the sixth form became firmly established as an elite minority with a stable character closely related to that of the public school sixth. As Reid and Filby (1982) point out, the development of sixth forms at this time, *"was more a story of routinization and entrenchment than of evolution and expansion".*

By the late 1930s there was mounting concern about the size of grammar school sixth forms. In 1938 many schools had fewer than 300 pupils, so their sixth forms can rarely have exceeded twenty (Edwards, 1970). Few were large enough to provide a wide range of courses. In an attempt to reduce the wastage of staff and duplication of courses,

the Spens Committee recommended the mutual transfer of sixth formers between schools in the same locality (Spens Report, 1938, p. 333-7). For many schools this was either impracticable or unacceptable. Those whose advanced work remained minimal were 'demoted' to secondary modern status under the terms of the 1944 Act.

The directive to provide secondary education for all was a stimulus for much prolonged and heated debate as to the form it should take. The sixth form soon emerged as the fixed point around which the whole system of secondary education should revolve. 'Multilateral' schools, despite their ideological advantages, were generally rejected on the grounds that they would be unable to sustain economically viable sixth forms. It was widely acknowledged that this academic pinnacle of secondary education must be preserved at all costs. The feeling being that their future would be most safely secured through the provision of secondary education on a 'tripartite' basis. Thus, in most areas, selective tests for grammar school entry were retained, the majority of children transferring at age eleven to either grammar schools or secondary moderns, with a few going to technical schools.

In the post-war period demand for places in grammar schools increased their intake to about 20 per cent of the age group. Initially at least, this did not result in sixth form expansion. The tendency for early leaving

still prevailed, with many pupils leaving the grammar schools without sitting the School Certificate examination, supposedly the natural climax of general academic education. However, by the late 1950s and early 60s the post-war bulge was working its way through the education system and sixth forms were destined to grow.

While the Ministry of Education had advance warning of the bulge in sixth form numbers, it had not anticipated the trend towards a longer school life that was apparent by 1955. Over the next ten years sixth form numbers doubled. By 1966, the total of 17-year-olds in maintained schools represented almost 12 per cent of the age group (Edwards, 1970). This explosion in sixth form education put heavy pressure on the schools and created fierce competition for entry to higher education.

When the School Certificate was first introduced in 1917, matriculation requirements were based solely upon performance at sixteen-plus. However, as the years went by, the Higher School Certificate increasingly became used as a means of selection for university places, and also for State scholarships. With the advent of the General Certificate of Education in 1951, selection became firmly based upon performance at Advanced level.

2.5 The erosion of the traditional sixth form

Notwithstanding the stability of the Advanced level examining system, the nature of the sixth form has, in

most institutions, changed beyond all recognition since the height of the grammar school period.

In the years following the 1944 Act it was soon apparent that overlapping between the three types of schools was inevitable. By 1958, half of the technical schools had developed sixth forms, and many secondary moderns were soon to follow suit. Although these sixth forms accounted for only a small percentage of pupils remaining in school beyond the age of sixteen, they were significant in that they reflected a new demand for post-compulsory education and perhaps highlighted a flaw in the selection procedure.

The arrival of comprehensive schools complicated the issue still further. The Spens Report of 1938 had expressed disquiet about this form of secondary education on the grounds that an unselected intake would have to be excessively large to provide a viable sixth form. This point was to be repeated on numerous occasions throughout the 1950s and 60s as the move towards a comprehensive system gathered momentum. Despite the assertion by many such schools that academic standards were being maintained in their sixth forms, and, in many cases, students were able to choose from a wider range of courses than their counterparts in the grammar schools, doubts still remained:

> *"In England our selective system, whatever its faults may be, has developed in the sixth form an academic training of outstanding merit. We have now deliberately turned our backs on selection ... Can the standard of the sixth form be maintained in a comprehensive system ?"*
>
> (Fisher, 1967, p.7)

The problem of school size and viable sixth form numbers led the local education authorities to experiment with a variety of schemes in an attempt to find a solution. Some chose to concentrate their sixth forms in a small number of schools and have students transfer at age fifteen or sixteen, others allowed sixth forms to develop in all their schools regardless of designated type - grammar, technical, comprehensive or secondary modern. For several authorities, complete reorganisation appeared to be the answer: so sixth forms could be found in twelve-to-eighteen schools, thirteen-to-eighteen schools, and even fourteen-to-eighteen schools.

As enrolments continued to rise throughout the 1960s, most schools managed to contain the problem of providing adequate sixth form courses. However, the sixth form was set upon an inexorable path of change. The growing demand for sixth form places inevitably meant a wider range of academic ability and a growing proportion not suited to the A level mould (Dean and Choppin, 1977). This posed a major problem for all schools with sixth forms, but those least able to cope frequently proved to be the traditionalists in the remaining grammar schools. For many of these schools 'change' was an anathema, and pupils

choosing to continue into the sixth were often subjected to the same curriculum and traditions as their predecessors twenty years earlier. In contrast, the comprehensive schools claimed to adopt the opposite approach, fitting courses to pupils and so meeting their needs (A.M.A., 1960, p.33).

The "*new sixth formers*" were defined by Dean and Choppin (1977) as "*those staying on at school after the age of sixteen, normally for one year, who have no aspirations to higher education and for whom A level courses would seem to be inappropriate*". A detailed discussion of the provision for such pupils is obviously beyond the remit of this study. Briefly, however, it has been shown that many of the 'new sixth formers' took O levels, which in many cases were wholly inappropriate, earlier findings having shown that the average attempt of approximately four subjects resulted in average passes of only about one and a half (Dean and Steeds, 1981). Other courses available to some sixth formers include Royal Society of Arts (RSA), Business and Technician Education Council (BTEC), and until relatively recently the Certificate of Extended Education (CEE) which was replaced in 1985 by the Certificate of Pre-Vocational Education (CPVE) (Smithers and Robinson, 1988). What is relevant to this project is the fact that these 'new sixth formers' have swollen the size of many school sixth forms and, in those schools where such students are attempting some A level work, have bolstered the numbers on A level courses. In this study

ninety of the students (12.84%) starting A level courses in school sixth forms had less than four passes at O level or equivalent. Most of these students were following O level courses in conjunction with just one or two A levels.

This *"increasing diversity of educational needs"* had been recognised as early as the late 1950s, with the Crowther Committee (1959) calling for larger catchment areas for those institutions providing full-time education beyond the minimum school leaving age. An adequate choice of course was only possible if numbers could be increased, transferring pupils if necessary to schools where the *"centre of gravity"* would lie with this older age group (Crowther Report, 1959, p.417).

This theme was to re-emerge on several occasions following comprehensive reorganisation when it became increasingly apparent that the sixth forms of many comprehensive schools were struggling to survive. A review undertaken in 1980 showed that "in some 1,100 schools the number of pupils over the minimum school leaving age was 50 or less in 1978-79" (Macfarlane, 1981). Macfarlane argued against maintaining small sixth forms because they were uneconomic in terms of staffing and resources and failed to provide enough stimulus for the most able pupils. Similarly Briault pointed out that "rich sixth form experiences depend a good deal on the

academic and social peer groups being of adequate size" (Briault and Smith, 1980).

It has been suggested that only in favourable circumstances can a comprehensive school with an eight-form intake develop a feasible sixth form group (Shaw, 1983). Indeed Naylor (1981) suggests that a fifteen form entry school is necessary for a sixth form of the standards recommended in the Macfarlane review. The fact that most comprehensives are of more modest size, the average having somewhat under 1,000 pupils (Shaw (1983), has meant that many comprehensives have been unable to sustain a sixth form of feasible size. Thus Naylor (1981) argued that the proliferation of small comprehensive schools was the root cause of the disappearance of sixth forms from our maintained schools.

Comprehensive reorganisation thus gave the stimulus for LEAs to find more efficient ways of providing sixth form courses in schools. In some areas consortia were set up where neighbouring schools would, between them, provide a wide range of courses, so staff and students could be shared in the sixth form. One of the schools in this study had this type of arrangement for a small number of A level students who wanted to study subjects that were not available in their own school.

Some schools operated a similar arrangement with the local college of further education, allowing their

students to follow a course at the college which was not available in school. Several of the comprehensive schools participating in this project had this type of link with the local FE college, but only a small number of their A level students took advantage of the facility.

A more radical alternative was the development of 'sixth form centres' which were located on the same site as a school, had the same headteacher and were staffed by the same teachers, but were usually accommodated in a unit which was separate from the main school buildings. The students at such centres were drawn not only from the fifth form of the adjacent school, but also from those of other schools in the locality. The first sixth form centres were established at schools which were part of a selective system, for example, Roseberry Grammar School for Girls in Epsom, Surrey (Dean and Choppin, 1977). They later became a feature of some non-selective schools as more local authorities underwent comprehensive reorganisation.

Many of the sixth form centres that emerged gradually grew away from their connections with the lower school, thus severing their links with hierarchical aspects of the sixth form tradition. Indeed several of these centres ultimately evolved into institutions which were entirely separate from secondary schools: the sixth from colleges as we know them today. College provision of A level education is discussed in Chapter Three.

Chapter three

College provision of A level education

3.1 Introduction

This chapter describes the development of college-based A level education for full-time students and provides the context for later discussion of subject choice and student perspectives on A level education in colleges.

Over fifty-five per cent of the students who participated in this study were on full-time courses in colleges. Of these eight hundred and sixty-seven students, four hundred and ninety-seven (57.3%) were in sixth form colleges, two hundred and sixty-one (30.1%) were in tertiary colleges, and one hundred and nine (12.6%) were in colleges of further education. All the colleges were co-educational. Most of the sixth form colleges and both the tertiary colleges had a minimum entrance requirement, in terms of examination success at 16+, for access to A level courses.

3.2 The role of the colleges of further education

Technical colleges, later renamed colleges of further education, were originally set up to provide vocational and technical education for those who wished to continue their studies, on either a full-time or part-time basis, beyond the statutory leaving age. Thus in 1970 Bristow described the role of the technical college in very specific terms:

"A technical college exists primarily to serve the needs of industry, commerce and the professions. It does so in two ways, first by promoting and providing full-time education for those wishing to enter these fields and, secondly, by promoting and providing part-time education for those already engaged in them. Thus vocational education for those who have left school is its major function".

(Bristow, 1970)

However, the colleges of further education have a tradition of being responsive to local demands, and even as early as the 1960s many had begun to develop their own full-time A-level courses. Initially the colleges were filling a gap in sixth form provision by catering for students from schools which did not have sixth forms, or those from schools which did not offer particular subjects or combinations of subjects.

During the late 1960s and early 70s more and more students voted with their feet in what Armytage (1970) described as "*the steady tramp to the tech*". The acceleration of the trend can probably be attributed to the growing dissatisfaction amongst young people for the authoritarian aspects of school life. As Holt (1980) points out;

"in the swinging years of Beatlemania, uniforms and prefects took the shine off the virtues of staying put, except for the more academic types who, in the main, recognised shrewdly enough that schools had close links with universities, and that they could well profit from them."

(Holt, 1980)

Evidence for such disgruntlement comes from the Schools Council study of 1970 which found that the most common area

of complaint among sixth formers was that they were subject to too many restrictions and constraints, and wanted more freedom and privileges (Schools Council, 1970).

The fact that FE colleges co-exist with school sixth forms means that in many parts of the country there is considerable overlapping of A level provision. Initially, when sixth form numbers were increasing anyway, the schools had little to fear from the developing full-time FE A level courses. Indeed some may have been glad to lose their "*long-haired divergers to the college down the road*", so saving the school from "*more trouble than they were worth*" (Holt, 1980). However, in building up their numbers of A level students many of the colleges began to shake off their former low-status image. More importantly, they showed that "*the ambience of the school was not an essential accompaniment to the successful completion of academic courses*" (Holt, 1980).

By the late 1970s the prospect of a steady decline in the 16-19 cohort made it increasingly apparent that the FE colleges could provide a very real alternative to the traditional sixth form. So much so that some schools felt it necessary to become very possessive about their pupils, an attitude which Terry (1987) claims was evident in the careers advice given to pupils aged fourteen or fifteen;

> *"the main object of which appeared to be to ensure that all those with the remotest chance of taking a sixth form course should do so - unless, of course they were considered trouble-makers. Few schools*

> *allowed the local further education college to be advertised on an equal footing with their own sixth form..."* (Terry, 1987)

In those areas that have centralised sixth form education into sixth form colleges which are entirely separate from the schools, many of the injustices of biased careers advice have disappeared, the decapitation of the schools having removed any vested interest in recruiting pupils into sixth forms.

When 11-16 schools are served by two types of college, the sixth form college and the college of further education, many authorities have permitted the duplication of A level courses in the interests of choice, but as Heley (1981) points out, the choice for students is often between the resources of the FE college and the genteel poverty but prestige-value of the sixth form college. DES surveys have shown that it is generally the less academically able and less well qualified A level students who tend to opt for the college of further education (Heley, 1981; Clarke, 1985). In this study twenty-seven of the FE college students (24.77%) had fewer than four passes at O level or equivalent at the beginning of their A level course, compared with 5.63% of the sixth form college students.

Thus Heley (1981) suggests that a situation results

> *"where those more likely to do well stay in sixth form colleges where every resource but human ones is markedly inferior, while those less likely to be successful attend further education colleges where good libraries, common rooms, refectories, computer installations, reprographic services and ancillary help of all kinds is taken for granted."* (Heley, 1981)

However, for some students the attraction of the FE college is not the range of courses offered or the facilities available, but the freedom permitted by the college environment. As Macfarlane (1978) points out, young people are severely irked by petty restrictions on individual freedom and initiative and the traditional school ethos is strongly condemned by the sixteen-nineteen age group on this score.

The findings of several studies seem to suggest that many students who choose to pursue A level studies in FE colleges are not only less successful in 16+ examinations but have generally failed to conform to the behavioural expectations of the secondary school (Ratigan, 1978; Dean et al, 1979). More recently, a study by Clarke (1985) has shown that the dispositional characteristics of FE students exert an independent influence some four times greater than differences in their intellectual ability in determining examination performance. "*In contrast, the performance of those students who opted for the sixth form college is more strongly determined by differences in intellectual ability*" (Clarke, 1985).

The above findings would seem to underline the need for effective systems of pastoral care within the colleges of further education. Unfortunately guidance and counselling have for a long time been peripheral activities in FE:

> *"Schools have always criticised FE establishments for their lack of pastoral strategies; teachers often refer to uncaring colleges where their former pupils feel lost and unloved".* (Flint, 1987)

To some extent this deficiency was probably a result of the old FE departmental autonomy, which over the years, in many colleges, has gradually been eroded. The lowering of rigid departmental barriers, coupled with the move towards a more student-centred curriculum, has facilitated the development of more sophisticated systems of guidance and counselling within FE. To a large extent this development, for full-time A level students, is probably a concomitant to the growth of courses within FE that are funded by the MSC (now known as the Training Agency). Guidance and counselling are central to such courses, so with their usual pragmatism, the FE colleges have responded to a need, and in so doing have begun to shake off their uncaring image.

All FE colleges are run under Further Education regulations, in contrast to the schools and the majority of sixth form colleges which are under School Regulations. This division, which was established by the 1944 Education Act, has become increasingly blurred as growing numbers of schools have introduced vocational courses into their sixth form curriculum, and the colleges of further education have taken a substantial slice of the sixth form cake. Of the three colleges of further education included in this study, two had substantial numbers of students (>50) in the first year of full-time A level courses, the third college had a

large number of part-time A level students, but few on a full-time A level programme.

In some LEAs the arbitrary divide between academic and vocational education has been further eroded by the establishment of tertiary colleges. These are discussed in Section 3.4.

3.3 Sixth form colleges

The notion of separate sixth form education first appeared in 1940 in Worsley's book **Barbarians and Philistines.** Here it was envisaged that "Junior Universities" might cater not only for sixth formers, including those from the public schools, but also students in part-time employment or on apprenticeships. These institutions would be run "*on proper democratic lines*" and would be free of "*that prolongation of adolescence which we have noticed as the bad effect of the present arrangement under which older and younger children live together*" (Worsley, 1940).

In 1943, Sir William Alexander, as Chairman of Sheffield ' Education Committee, noted the extent to which sixth form classes had become increasingly uneconomic and suggested that the Authority consider centralising its sixth form provision as part of the post-war reconstruction (Macfarlane, 1978). However, nothing came of this proposal and the idea lay dormant for over a decade before Wearing King, then Chief Education Officer for Croydon, drew

national attention to his proposals to bring all his Authority's sixth-formers together in one institution. This scheme raised a storm of protest, not only from teachers, but from the public at large. It struck at one of the basic assumptions of the sixth form ideology - that sixth-formers should stand in an authority relationship to younger pupils (Reid and Filby, 1982). King's view of education, however, centred on the good of the individual as opposed to the benefit of the school community:

> *"We have no right to arrange the education of one child in order to benefit another. To say that sixth-formers are a good influence in the school and therefore they ought to remain there whether it is in their interests or not is to deny them a fundamental right, namely to be educated for their own proper benefit."*
>
> (King, 1968)

King adopted a similar stance to the objections from teachers whom, he argued, were motivated by their own self-interest. Many feared they might lose their coveted sixth-form teaching where classes were generally small and well-motivated, so permitting the indulgence of academic interests and providing a welcome break from the exigencies of work with pupils in the lower school. Thus when the Croydon plan was rejected King (1968) concluded that "*sixth formers are to be retained in the school not for their own benefit but to please the staff*". Moreover, King suggested that small sixth forms denied students a fair chance in examinations which brought them into competition with those in larger grammar schools and public schools. In order to provide "*a fair opportunity in the modern world*" King

suggested that the minimum sixth form group should consist of between 400 and 500 students.

Although the fruition of King's scheme was thwarted, in the short term, by the strength of local opposition, it was widely publicised and generated considerable national interest. Thus King probably planted the seeds for many of the subsequent developments that were to take place in the 1960s and 70s in the rationalising of local authority sixth form provision.

By this time economic pressures probably provided the most persuasive argument in favour of separate college provision for sixth formers. It was becoming increasingly apparent that the newly created comprehensives would need to be excessively large in order to support sixth forms of reasonable size. The remaining grammar schools were not without problems. The declining popularity of the classics resulted in low pupil teacher ratios in Latin and Greek, whilst the introduction of new subjects, such as Economics, Russian and Statistics, could only be achieved by permitting uneconomic levels of staffing.

In 1964 Mexborough became the first local authority to establish separate sixth form provision; followed by Luton in 1966. In the early 1970s the pace quickened and by 1972 fourteen colleges had been opened and many more were planned.

The colleges were usually large and without competition in the immediate area. So, as Reid and Filby (1982) point out, they could set fashion rather than follow it. Most colleges adopted a more liberal regime than the traditional sixth forms: abolishing uniform and outmoded regulations about hairstyles and make-up; and encouraging active student participation in college policy-making and finance. Some experimented with new methods of teaching and evolved a system of lectures, seminars and tutorial sessions. However, for those institutions accommodated in former school buildings the size of the teaching rooms available meant that the scope for this was limited. Most colleges were primarily concerned with A level work which was taught in the time-honoured way - through factual, transmission teaching which, much as it might be deplored by educational theorists, was not in the least bit resented by the majority of students (Reid and Filby, 1978).

The number of students enrolled in the sixth form colleges meant that there was scope for the provision of alternative courses to A level, where this was seen as desirable. The extent of such provision, based upon the proportion of students in any given college taking no A level subjects, reveals that there is a continuum from those few colleges which cater almost exclusively for A level candidates to those which have almost half their students on non-A level courses, for example, GCSE, City and Guilds, RSA, CPVE and a wide range of non-examination courses (Standing Conference of Principals of Sixth Form

and Tertiary Colleges, 1986). In this study both extremes of the spectrum are represented in the sample of five sixth form colleges.

By 1986 there were 107 existing, or approved, sixth form colleges listed in the Compendium of Sixth Form and Tertiary Colleges (Standing Conference of Principals of Sixth Form and Tertiary Colleges, 1986). Of these, seven officially stipulated entrance requirements, three failed to indicate their status, and the remainder claimed to be open access. In theory the open access sixth form college should admit students without any academic entry requirements and by corollary provide courses to meet the needs of the whole ability range (Watkins, 1982). In practice, as has already been mentioned, the range of provision other than A level is extremely variable. For some colleges the term open access is interpreted in its broadest sense as a willingness to accept students on to A level courses without stipulating a minimum academic entry requirement. Obviously such a philosophy provides academic opportunities for a much wider range of students than the traditional sixth form. The worthiness of this practice has, to some extent, been vindicated by some of the striking success stories of examination performance by students who were poorly qualified at age sixteen.

> *"The conscientious plodders, the late developers, the pupils talented in a limited area, those who wished to shed their past idleness, the poor examinees .... The open-access college would give them their chance."*
>
> (Macfarlane, 1978)

However, for the majority of sixth form colleges, the term "open access" does not imply automatic admission to any course. On the contrary, many stipulate a minimum entrance requirement for A level courses, often four passes in examinations taken at 16+. In this study three of the five sixth form colleges had no students on A level courses with fewer than four passes at O level or equivalent. Two of these required students to have at least five such passes in order to study A levels. At the other extreme one of the colleges had three students with no examination passes, five with only one pass and eight with just two passes. In total twenty-eight of the sixth form college students (5.63%) had less than four passes at O level or equivalent.

3.4 Tertiary colleges

During the late 1960s, although the sixth form population was in a period of growth, the increased demand for vocational education and the strengthening of links between schools and colleges of further education, made one additional development inevitable: the union of the academic and the vocational to form a single institution catering for all young people who wished to extend their education, either full-time or part-time, beyond the statutory leaving age.

The first tertiary college was set up in Exeter in 1970. The original intention of the education committee had been to establish a sixth form college on the site of the boys' grammar school (Merfield, 1973), but it was noticed that

the technical college had as many A level students as the grammar school. Thus a tertiary college appeared to be the obvious way to avoid duplication of courses. "*So England's first tertiary college emerged partly through the example of the sixth form college, which prepared the ground for its acceptance; but partly also because of the success of the FE college in doing the traditional job of the schools*" (Holt, 1980).

Other education authorities were swift to recognise the advantages of the tertiary solution and by 1979 fifteen had been established. The majority were based upon existing colleges of further education, often as part of schemes for comprehensive reorganisation. Later on a number of tertiary colleges developed from comprehensive sixth forms whilst others were the result of mergers between sixth form colleges and colleges of further education.

Many of the proponents of the tertiary ideal have pointed to the educational advantages of such colleges, for example, the wider range of courses available, the larger number of subjects offered at A level and the ease of transfer between courses for students who make the wrong choice. Other arguments have focused on the philosophical appeal of an institution which accommodated all 16-19 education under one roof, this being the logical extension of the comprehensive ideal:

> *"to separate future doctors, dentists and lawyers, at the age of 16, from future mechanics, shoe repairers and fast-food chefs is unnecessarily divisive and contributes to the misunderstandings and prejudices with which our society is riven".* (Austin, 1987)

For many LEAs, however, the deal has been clinched by financial considerations. As Harland (1988) points out, *"in many authorities the arguments for reorganisation have been frankly resource based. Pressures created by declining school rolls, disappointing participation rates in full-time study, and wasteful duplication of courses have necessitated the changes".*

Whatever the rationale, the movement towards tertiary colleges has found support with all major political parties: *"First the Liberal Party espoused them - then its Alliance partner the Social Democratic Party, and then the Labour Party. And while the Conservative Party had no national policy ..... it was a Conservative Secretary of State who approved over forty tertiary reorganisations in the early 1980s"* (Terry, 1987). By 1988 there were fifty-two colleges in existence (Education Year Book 1989, 1988) with several more schemes submitted and awaiting approval. The changed ratio of sixth form to tertiary colleges is reflected by the decision of the Standing Conference of Principals of Sixth Form and Tertiary Colleges to change its name to the Standing Conference of Principals of Tertiary and Sixth Form Colleges as from 1988.

The size of tertiary colleges varies considerably, depending largely upon the size of the population in the area they serve. The smallest have less than five hundred full-time students, the largest approximately two thousand five hundred (Standing Conference of Tertiary and Sixth Form College Principals, 1988). In all cases the number of full-time students is considerably greater than the total attending all the various forms of post-sixteen education in that area before reorganisation (Austin, 1987). The two tertiary colleges included in this study were both Group 5 and may thus be considered to be of average size (both have shown an increase in their numbers of full time students since the beginning of this study).

The taught curriculum of the tertiary college epitomizes its 'raison d'etre': the need to provide something appropriate for everybody; the need to provide courses which lead to employment both locally and nationally; and the need to prepare suitable candidates for entry to higher education (Austin, 1987). Thus the colleges' provision will reflect the diversity of demands made not only by the entire 16-19 age group, but also people of more mature years who are seeking either full-time or part-time courses.

Although certain conventional groupings can easily be identified, for example, students following A level courses, those pursuing BTEC qualifications, and those on City and Guilds courses, a tertiary college is not simply a

college of further education with a broadened A level base. The tertiary college can use its wealth of curricular provision to build up a timetable for an individual student which cuts across the traditional boundaries (Taylor, 1985). Thus a BTEC course with two or three GCSEs may well be a more effective stimulus to success and subsequent choice than the old O level repeat course with its appalling failure rate (Dean and Steads, 1981). Similarly a limited A level course with a BTEC National Certificate may be more appropriate for some students than the traditional three A level route to higher education. In order to make such provision there must be a single timetable for the college as a whole which permits a mix of the vocational and the academic (Terry, 1987).

However, the argument for tertiary colleges does not rest solely upon their impressive breadth of curriculum or their ability to place students on more appropriate courses. Since their inception the success of these new colleges has been monitored closely in terms of examination success - the yardstick most frequently used by those who stand in judgement of educational achievement. In 1979 a survey carried out by the NFER showed that, allowing for the previous exam record of entering students, sixth form and tertiary colleges achieved results as good as those of grammar school sixth forms (Dean et al, 1979). More recently, an analysis of the 1984 A level results has shown that the pass rate achieved by tertiary colleges, across all subjects, was 75 per cent: a higher figure than that

achieved by the sixth form colleges, and considerably higher than that achieved by those studying in the sixth forms of comprehensive schools (Austin,1987). As Austin points out, since admission to A level courses in tertiary colleges is certainly no more, and probably less, restricted than in comprehensive school sixth forms or sixth form colleges, the results are very encouraging. In this study, both the tertiary colleges stipulated that students must have at least four passes at O level or equivalent in order to study on full-time A level courses. However, both made a small number of exceptions to this rule. Thus eight of the tertiary college students (3.07%) had less than the stated requirement.

Whatever the arguments, the number of tertiary colleges continues to grow as more LEAs rationalise post-sixteen education in schools and colleges. It thus appears inevitable that the tertiary colleges are going to play an increasingly important part in A level education in the 1990s and beyond.

Chapter four

The background to A level examinations

4.1 The beginnings of a State system of examinations

Examinations were a major cause of concern to everybody connected with secondary education in the early years of the twentieth century. Prior to the introduction of the School Certificate in 1917, the main cause of dissatisfaction was the cramping effect of the multiplicity of external examinations. These were conducted by various independent bodies, including the universities, the Civil Service and several professional bodies. Other organisations, for example the Royal Society of Arts, provided examinations in particular subject areas. In addition, the work of some schools was tested by the system of 'local' examinations introduced by Oxford and Cambridge in the mid-nineteenth century, and later mimicked by other universities. Inevitably such rapid, haphazard growth resulted in a plethora of qualifications, many of which had a restricted currency.

As early as 1903, a committee appointed by the British Association drew attention to complaints of the overlapping and conflicting demands of the various academic and professional bodies. They suggested that there should be an examination for boys leaving school between the ages of sixteen and seventeen, and another for those leaving at eighteen or nineteen, with closer relationships between examiners and teachers (British Association, 1904).

At much the same time the Consultative Committee of the Board of Education held conferences with the universities, the teachers' associations and the professional bodies; and drew up a plan for leaving certificates. However, although the Board, in its report for 1904-5, acknowledged the educational advantages of such a scheme, it lacked the strength and conviction to create what might have been seen as a State monopoly of examinations.

Despite the reluctance of the Government to get involved, the idea of a 'School Certificate' was taken up by several of the examining bodies themselves. For example, Ripon Grammar School invited inspection by the Joint Matriculation Board in 1905, and one or two other schools followed suit during the next few years. As part of the scheme of inspection and examination of schools, the J.M.B. introduced their own School Certificate which was by regulation a Matriculation Certificate also (Petch, 1953). Shortly afterwards, Higher Alternative papers were made available to meet the demands of the growing number of pupils staying on in the new secondary schools, beyond matriculation, in the expanding sixth forms.

Initially the J.M.B. had stipulated that candidates for County Scholarships, tenable at the universities, would be required to take "some" subjects at a higher level than normal. These Higher Alternative papers presupposed *"not less than one year of study beyond the stage of preparation required for the corresponding ordinary papers"* (Petch,

1953). By 1910 the J.M.B. had clarified its position by advising that candidates for university scholarships should attempt *"say three or four"* of the Higher papers. Thus the scene was set for the development of the Higher School Certificate as a subject group examination which was to be introduced in 1917.

4.2 The School Certificate examinations

In 1911 the Consultative Committee of the Board of Education returned to the subject of examinations and produced a major report which laid down the basic pattern of the School and Higher School Certificates. The implementation of the new examination hinged largely upon the increased powers of the Board of Education. Since secondary education had become a national concern, the committee felt that central administration was justified. After a series of conferences with interested parties, the Board issued its own proposals in 1914 (Circular 849). These kept very close to the proposals of the Consultative Committee. Each grant-aided secondary school would be annually examined by one of the university examining boards. The first examination at 16+ should be based upon the general secondary school course, divided into four subject groups. The exam was to be offered at both a pass and higher standard, the latter gaining exemption from university matriculation. The second examination was only available to schools which offered, *"an organised course extending over about two years beyond the stage of the first examination"*. It was to be set out in groups of main

subjects plus subsidiary subjects. The need was stressed to involve teachers as much as possible by allowing them representation on examining bodies, by letting them submit their own syllabuses, and by requiring heads of schools to submit an order of merit for their own candidates (Roach, 1979).

Inevitably delayed by the outbreak of war, it was not until 1917 that Fisher, as new president of the Board of Education, announced that sixth form courses leading to university entrance would be awarded special grants. These advanced courses would be provided in three groups of subjects - classical studies, modern studies, and mathematics and science. All schools with a sixth form were to aim at providing one of these courses, with neighbouring schools cooperating in the transfer of pupils in order to accommodate their interest in a particular group of subjects.

The Secondary School Examinations Council was set up, almost immediately, to advise the Board of Education and coordinate the new examinations through the various examining bodies. The details of the scheme were specified in later circulars. In December 1917, Circular 1023 explained the basic requirements and general principles of the new advanced courses. They were described as suitable only for those intending to take honours degrees. Specialisation was assumed, the new courses providing ...

"continuous, coherent, and systematic instruction in a group of subjects which have organic unity ... the regulations are not meant to encourage ... 'fancy' courses in an arbitrarily selected collection of disparate subjects".

(Board of Education, Circular 1023, 1917)

Central control over the examining system imposed a new uniformity over the secondary schools which, in some quarters, was not welcomed. It was suggested that the new Examinations Council had no independent power and was merely a cloak for bureaucratic control by the Board of Education (see Roach, 1979 p.52). Despite such accusations, the SSEC was left to deal with many problems that arose during the inaugural years of the School Certificates.

One of the most pressing concerns at sixth form level was how the second examination would select the best candidates for the State Scholarships which were introduced in 1920. These awards were highly prestigious, with many scholars ultimately obtaining first class degrees. It was acknowledged that a single examination could not select such superior candidates and, at the same time, provide a suitable test for the less able sixth formers who were already staying on in increasing numbers. In 1939 a panel of investigators appointed by the SSEC suqgested two possible changes: either the handing over of the award of State Scholarships to the universities, or the separation of the pass element from the scholarship element by the creation of two separate, and successive examinations

(Secondary School Examinations Council, 1939). To some extent their suggestions were pre-empted by the J.M.B. who had already decided that in 1938 candidates for university scholarships would attempt the Scholarship paper in each of their two principal subjects; at the same time their was an attempt to reduce the content of all subject syllabuses (Petch, 1953).

Despite the intervention of the J.M.B., the dual objectives of the second examination still remained an issue in 1943 when the Norwood Report recommended that there should be two separate examinations at this stage: one a qualifying examination for professional bodies and university entry, the other a scholarship examination for State and local authority awards. Although the Norwood Report was generally well-received by the press (Gosden, 1976), reform along such lines was delayed by opponents such as Brereton (1944) who argued that the second examination was a suitable test for all kinds of pupil of that age.

In addition to the problem of the dual objectives of the second examination, there was mounting concern that sixth form work was becoming too specialised. Although the Higher Certificate regulations emphasised the need to study a small group of subjects in depth, there was provision for more general work through the study of subsidiary subjects. Unfortunately, fewer than three passes in principal subjects were regarded suspiciously by the universities.

Thus university demands, coupled with severe competition for grants and scholarships, meant that this general work was frequently neglected.

The problem was magnified by the growing number of new subjects clamouring for a place on the timetable. In France and Germany these subjects had been incorporated into the curriculum at their Governments' insistence (Edwards, 1970). In England however, with no clear guidance from the Board of Education, the schools were left to their own initiative. Inevitably most schools once again bowed to market pressure, so the traditional curriculum was slow to expand.

4.3 The General Certificate of Education

In view of the multifarious arguments surrounding sixth form education during the early years of the century, it is not surprising that it was 1947 before the SSEC presented a new set of proposals to the Board of Education. The new General Certificate of Education, in line with the recommendations of the Norwood Report, would be offered at three levels. The Ordinary level provided a single subject test of work done as part of a wide and general secondary course up to the age of sixteen, but the possession of a certificate would no longer be a guarantee of a broad general education. The Advanced level examined work studied intensively during two years in the sixth form, the choice of subjects being freed from the group requirements of the Higher Certificate. The Scholarship level was

designed for *"specially gifted pupils"*, on which State scholarships and other awards could be based without setting unreasonable standards for the average sixth former (Edwards, 1970)

The first General Certificate of Education examinations were held in 1951. The Ordinary level certificate gave information about candidates' general education, being a qualifying examination with one official pass level. The Advanced level immediately assumed considerable importance for university entrance, with specialist knowledge being tested rather than general academic attainment.

Prior to the Second World War the universities had more places than applicants, and had thus been content to accept credits in the fifth year certificate as evidence of a sound general education. However, as sixth forms grew, along with the demand for higher education, the universities became more selective and increasingly used the sixth form examinations as the criteria for selection. By 1949 the universities had already decided upon a new set of matriculation requirements which would make use of the new examinations (T.E.S. 15th January, 1949). Four or five General Certificate passes were required, including a pass in English language, and two of them were to be at Advanced level. These minimum requirements were adopted by most universities, although several also established their own 'faculty conditions' which required Advanced passes in

specific subjects. In addition, Oxford and Cambridge had their own entrance examinations.

From the outset the Advanced level certificates had been intended to indicate a qualifying standard, and thus did not show more than a pass or distinction. Marks or gradings were, however, available to headteachers who were generally permitted to pass these on to parents, pupils and teachers. By 1960 the examining bodies were operating an unofficial scheme of grading Advanced level results to help local authorities in awarding grants (Secondary School Examinations Council, 1960). This scheme gained the formal approval of the SSEC in 1963, thus acknowledging the competitive function that had been thrust upon the new examination.

4.4 Proposals for A level reform

In the early days of the GCE the A level system catered for the academic elite of the selective grammar and public schools. One of the features of the sixth forms of such schools was specialisation: pupils were assumed to have a natural leaning towards either the sciences or the arts. This assumption is enshrined in the comments made by the Crowther Committee in 1959 with regard to specialisation:

> *"It is the mark of the good and keen sixth former .... his mind has been set that way by inclination and the main school mechanism."*
>
> (Crowther Report, 1959)

However, the ideology of 'subject-mindedness' was not without its critics. Snow (1959) argued that the great gulf which was developing between the scientific and humanistic cultures was not only undesirable but potentially dangerous, and should be remedied by change in the curriculum. This view was endorsed by Peterson (1960) who cited two main weaknesses in the English sixth form curriculum of this era: firstly the exclusive choice between Arts and Science made by pupils at age sixteen - "*an age when they are too young for their lifelong interests and aptitudes to have established themselves*", and secondly, that such a curriculum made a genuinely balanced education impossible.

The Crowther Committee of 1959 had sought to address the latter problem. Although they described 'subject-mindedness' as a characteristic of the sixth former, they did not approve the study of either arts or sciences to the exclusion of all else. They recommended that one-third of the time in the sixth form should be devoted to non-specialist work. In addition to proposing that some common elements, for example, art, religious studies and physical education, should be taken by all sixth formers, the Crowther Committee also suggested that complementary elements should be designed to try to ensure, "the literacy of the science specialist and the numeracy of the arts specialist".

In 1964, in the midst of this concern over specialisation, the newly formed Schools Council declared sixth form curriculum and examinations a first priority. In Working Paper No. 5 they advocated a broadening of the curriculum through a system of 'major' and 'minor' courses, with a pattern of two 'majors' and two 'minors', together with general studies, making up a more balanced curriculum than the traditional three A levels (Schools Council, 1966). The proposal was rejected by the schools for two main reasons; firstly teaching difficulties in the small sixth form, and secondly a concern that the new 'minor' subjects would be unsuitable for the 'new sixth formers' with their less academic interests (Peterson, 1973).

In its second attempt at reform, the Schools Council (1967), in Working Paper No. 16, proposed that university entrance requirements should be met by two A levels, and that these should be supplemented by four to six one-year 'elective' courses, to be internally designed and assessed. Objections were raised concerning the potentially second-class role of the electives, their doubtful value in university entrance selection, and the problem of consistency of standards between schools (Smithers and Robinson, 1988).

By this time the search for an alternative to A levels was gaining momentum. In 1968 the Dainton Report proposed a sixth form course of four or five subjects, each slightly less demanding than A level, including mathematics for all,

plus one subject from each of the major groups of science, social studies and arts (Council for Scientific Policy, 1968). At the same time the Headmasters' Association was formulating its own proposals on the sixth form curriculum and examinations. In its paper **The Sixth Form of the Future** (Headmasters' Association, 1968) it advocated the introduction of an 'Intermediate' level of the GCE, with 'I' levels being of a similar academic standard to A level, but covering less ground.

In 1969 a joint committee of the Schools Council and Standing Conference on University Entrance produced their **Proposals for Curriculum and Examinations in the Sixth Form** which recommended a new examination system based upon five subjects, at either of two levels; five subjects to be taken in an examination at the end of the first year in the sixth and two or three, at a higher level, to be taken at the end of the second year. The five subjects would be chosen in a framework designed to encourage a broader base of study. However, the scheme was rejected by both the teaching profession and the universities on the grounds that major examinations in three successive years were unacceptable (Jennings, 1985).

Following a major re-think, Working Paper 46 (Schools Council, 1973a) and Working Paper 47 (Schools Council, 1973b) recommended that A level be replaced by 'N' and 'F' levels. It was envisaged that breadth and balance within the curriculum could be achieved by studying five main

subjects in the sixth form. These would be examined after two years, two at the higher or 'further' level and three at the lower or 'normal' level. These proposals did not find favour and were finally rejected in 1979, principally because they were felt to be unacceptable to higher education (Smithers and Robinson, 1988).

In 1980, the then Secretary of State for Education and Science virtually closed the discussion on major reform by announcing that the GCE A level examination was to be retained (DES, 1980). Instead the introduction of Intermediate or 'I' levels was proposed as a compromise (DES, 1980). Under this scheme A levels could be retained and supplemented by a new course which would be equivalent in teaching time and content to half an A level. To emphasize this the new examination was renamed Advanced Supplementary or 'AS' level. In 1985, the White Paper **Better Schools** gave the go-ahead for the first AS level examination in 1989, following two years of study (DES, 1985).

In the DES guide that was produced for students and parents Kenneth Baker, then Secretary of State for Education, said, "*I regard these examinations as an important step in checking the early specialisation in our examination system*" (DES, 1986). However, in October 1987 the Times Educational Supplement reported that the new courses were "*thin on the ground*" (TES 23.10.87 p15). In a survey conducted by Smithers and Robinson (TES 11.3.88 p19)

twenty-two of the thirty schools and colleges in their sample were not offering the new courses. Only in four institutions had the new examination been embraced whole-heartedly, the other four offering just a few AS level courses. Smithers and Robinson highlighted four of the reasons for this apparent reluctance: lack of resources, clashes with general studies, doubts over acceptability for higher education, and other changes being given higher priority. Of these reasons it is perhaps doubts over acceptability that have attracted most attention, with the universities still requiring a minimum of two A levels, but two AS levels being acceptable in place of a third.

Concern has also arisen regarding the broadening role of AS levels. In the absence of any guidance about appropriate subject combinations of A and AS levels, students may choose AS subjects which complement their A levels, rather than contrasting with them. The fact that many university science departments are stipulating complementary AS levels (Heap, 1989) obviously encourages such specialisation.

The CNAA has gone further than the universities with its acceptance of four AS levels in place of two A levels as fulfilling the normal minimum requirement. However, it is the colleges and polytechnics that actually accept students, and many subject departments still require specific A level passes as part of their course requirements.

Smithers and Robinson (1988) suggest that in supporting the proposals for Advanced Supplementary, SCUE and the CNAA have recognised the need to accept and promote reform. However, the new examination does not by any means represent a radical change for most sixth formers. In the first year of the examination, figures released by the DES suggested that out of more than 35,000 AS entries, fewer than 0.25 per cent were part of the considered ideal combination of two A levels plus two AS levels (TES 25.8.89 p4). In the same article it was reported that more than 83 per cent of the entries appeared to be for one AS level only, many taken after one year in the sixth form. Similar findings in Wales prompted the Director of the Welsh Joint Education Committee to call for the abolition of AS levels because they were not fulfilling their objective (TES 25.8.89 p4).

Amidst the arguments about the new AS levels, the introduction of the GCSE was focusing attention on A level as the first cohort of GCSE students embarked upon A level courses in September 1988. Wragg (1988) pointed out that although some A level examinations have introduced the precepts of GCSE into their syllabus and ways of working, most have not. "*Thus GCSE graduates embark upon traditional A level courses with their heavy emphasis on fact learning*" (Wragg, 1988). Similarly Neather (1988) reported that his research had shown that the GCSE had "*significantly altered the landscape for the approach to A*

level" and had cast considerable doubt on the validity of "*a wholly norm-referenced, sudden death examination*".

The failure of the A level system to accommodate the GCSE was one of the concerns of the Higginson Committee which was set up in March 1987 to recommend the principles that should govern A level syllabuses and their assessment (DES, 1988a). From the evidence gathered it was apparent to the committee that, "*over the years syllabuses have become too voluminous and candidates over-burdened with having to memorise a large amount of information to the exclusion of other important demands*". A levels were also criticised on the grounds that, "*the system encourages specialisation*" and that "*programmes of study are too narrow*" (DES, 1988a).

This most recent major attempt at A level reform welcomed the introduction of AS levels as a means of extending the number of subjects taken at sixth form level. However, the Higginson Committee recommended that the combined system of A and AS should be developed:

> *"The move from three subjects to four is useful, but an extension to five subjects would be an important improvement. It would give better choice, better opportunities for balance and greater breadth. Brought about in the right way, it would increase rigour and improve rather than simply maintaining standards"*
>
> (DES, 1988a)

It was envisaged that the syllabus content of A levels would be pared by reducing to a minimum time-consuming

tasks with limited intellectual demands and return. "*It means removing altogether the temporary committal to memory of inessential and inconsequential information*" (DES, 1988a). The new leaner syllabuses would instead focus on higher level skills and build on the GCSE experience, thus providing greater coherence and continuity than the present A level system. The introduction of internal assessment into all A level courses and the use of profiling, both of which would be referred to on the A level certificates, were seen as useful means of conveying the qualities of candidates in a way the present single grade cannot do. It was anticipated that the new arrangements should present "an attractive challenge", not only to the very able, but also to students who experience difficulty. Thus it was suggested that the new system of A and AS levels would be more attractive to all able students, and syllabuses should be designed for those who intend to go straight from school into employment, as well as for those who wish to go into higher education.

As soon as the report was published, Kenneth Baker, Secretary of State for Education and Science, announced that although the Government endorsed the general aim of broadening A level students' programmes of study, it rejected the key recommendation on the adoption of the five subject pattern. Instead the Government saw AS levels as the means of achieving greater breadth.

The rejection of the Higginson proposals attracted much media attention and drew a storm of criticism from many quarters. The Guardian, for instance, quoted the chairman of SCUE as being extremely disappointed that the Government had not accepted the proposals in full (The Guardian, June 8, 1988 p1). Outside of education, the Confederation of British Industry was reported to be similarly despondent, having been attracted by the idea of five subjects as a means of broadening the experience of young people in their last two years of education (The Guardian, June 14, 1988, p21).

In the wake of any hope for A level reform within the immediate future, some of the newly formed City Technology colleges announced their rejection of the A level system. Kingshurst CTC, in Solihull, planned to offer students BTEC or International Baccalaureate; whilst at Djanogly CTC, in Nottingham, A levels would only be provided if there was a demand (TES 27.10.89 p.1). Although in recent years the IB has seen a steady growth of between 15 to 20 per cent, most of this expansion has been from outside the UK. O'Shea (TES, 2.3.90 p.22) suggests that the main reason for this is the lack of necessary finance, the IB being more demanding in terms of teacher contact time. In times of financial stringency it seems unlikely that institutions relying wholly on public funding will be able to opt for this more expensive alternative. However, if the IB becomes an established part of the identity of the CTCs, and the universities accept it more readily, other

institutions may actively pursue the resources necessary to follow suit.

Despite the challenge of a plethora of proposals and counterproposals, the Advanced level system of examining has reigned fundamentally unchanged for almost forty years. However, the GCSE has now radically altered the pathway to A level, and the AS level venture has drawn attention to the need to broaden the sixth form curriculum. Moreover, the growing popularity of alternatives to A level and the current trend towards broadening admission requirements both give added impetus to the need for reform. It may thus be that the time is ripe for change. It seems unlikely, however, that revision of the A level system could realistically begin before mid 1991 when the shape of the new GCSE, which will accommodate the Attainment Targets of Key Stage 4 of the National Curriculum, will become apparent. Thus current syllabuses will probably remain largely unchanged until at least 1995.

Chapter five

Options or obligations?

A review of the literature on subject choice

5.1 Introduction

The choice of subjects for study, at examination level or otherwise, is probably one of the most important decisions to be made by young people today. In the short term, initial subject choice provides the immediate framework for the academic experiences of boys and girls during the last two or three years of compulsory education. Frequently it may also shape several aspects of their social existence, for example, the friendships they form and the attitudes and opinions they develop. More significantly, the choices made at this stage often have profound implications for subsequent subject choice and the employment that may ultimately occupy much of their adult life.

The importance of subject choice is largely a function of its irreversibility; most pupils being aware that changes will be difficult, if not impossible, once progress has been made along particular paths. The growing range of subjects available, and the various levels at which they may be studied (prior to the introduction of GCSE), have undoubtedly compounded the complexity of the decision making process. The situation is exacerbated by the early age of initial subject choice in this country; young people being faced with this important decision at a time in life

when many lack intellectual and emotional maturity, and usually have little experience upon which to base their choice.

Putting aside the obvious personal importance of the choices made by young people, it is necessary to consider the wider implications for society as a whole. The demands of a technological society are highly specific, requiring well-qualified people to fill diverse, but particular roles. Failure to produce such people in adequate numbers may result in social iniquity and serious economic embarrassment.

In view of the importance of subject choice, not only for the individual, but also for the society in which he or she lives, it is perhaps surprising that the issue has been so frequently neglected by those empowered to make policy decisions. Despite the wealth of reported research and the expression of concern by many educationalists, the process of choice, for many pupils, remained fundamentally unchanged from the inception of the GCE in 1951 until the introduction of the GCSE and the National Curriculum in the late 1980s. As the experiences of the students involved in this study pre-dated these recent developments this chapter is restricted to the 'traditional' process of subject choice.

5.2 The timing of initial subject choice

In England and Wales initial subject choice is generally made towards the end of the third year of secondary education i.e. at age 13+. The timing of this decision has generated much debate in recent years. As Ormerod (1981) points out, "*in no other Western democracy is the die cast so soon*".

Most pupils, parents and teachers recognise the time of subject choice as a 'turning point' in life. Thus it is widely accepted that the process should be preceded by some form of guidance. Over the years this has become inextricably linked with careers. This vocational guidance appears, in most schools, for the first time during the third year; sometimes as an integral part of the curriculum, but more frequently in the form of group meetings or personal interviews with the careers teacher or local careers officer. Ryrie et al (1979) identified such formal systems of guidance as a consequence of changes in educational policy, three major factors being cited in this context: the increased size of schools under the comprehensive system, the raising of the school leaving age, and the increased variety of subjects available. Whatever the origins of guidance programmes, their general function is to increase the involvement of the pupil in the decision making process.

Traditionally the advice proffered to pupils, not only by professional counsellors, but also by parents and

teachers, has been based on the premise that individuals should select subjects that will prepare them for the careers they have in mind. Ryrie et al (1979) express grave doubts about the wisdom of guidance on this basis. They point out that such entrenched assumptions implicitly assume the credibility of the career aspirations of thirteen and fourteen year olds, and suggest that we should perhaps question the validity of such intentions as criteria for initial subject choice. Will they stand the test of time, or are they simply passing notions or fancies?

Even when early career aspirations persist over the two remaining years of compulsory education, employment problems may raise the issue of reality in terms of opportunities available. Several studies have shown that whatever their earlier intentions or the nature of the guidance they have received, many school leavers in fact take whatever job is available (Roberts, 1977; Haystead, 1975; Allen, 1976). A similar phenomenon is apparent at higher levels in the educational system, with many graduates taking employment in fields totally unrelated to their degree subject. Taylor and Johnes (1989) found that graduates in certain non-vocational subjects, for example, biology, geography, history and English, took "*a wide sweep of the labour market*" to find a satisfactory job. This phenomenon seriously challenges the notion that career aspirations are a sensible basis for initial, or even later subject choice for many young people.

The timing of initial subject choice may be particularly crucial for girls. Such sexual inequality in education is discussed in detail by writers such as Kelly (1981), Spender (1982), Harding (1983), Pratt et al (1984) and Johnson and Murphy (1987). As Kelly (1981) points out, at this stage of their school career girls are centrally concerned with defining their femininity, and will frequently avoid any activity with masculine connotations. When presented with subject options many tend to act out their femininity by avoiding "boys' subjects" and choosing "girls' subjects" instead. This perception of certain subjects as masculine or feminine has been reported by several researchers, for example, Dale (1974), Ormerod (1975) and Harvey (1984). In a study of thirteen and fourteen year olds, Weinreich-Haste (1981) clearly demonstrated that woodwork and physics were rated most highly masculine, followed by mathematics and chemistry. History and biology were rated as being fairly neutral, and English, French, typing and cookery were perceived to be feminine subjects. The wealth of documentation in this area leaves little doubt that the perceived masculinity of the physical sciences is a substantial variable in the rejection of science by many girls.

The perceived femininity of the languages has received somewhat less attention. One of the few recent studies in this area involved nine hundred and twenty-five third year pupils. Teacher gender was investigated as a possible variable to account for the marked imbalance of boys and

girls studying foreign languages (Powell and Batters, 1986). However, they concluded that pupils of both sexes rejected the idea that one sex of teacher was to be preferred to the other. Similarly sex of the teacher had little influence on pupils' performance in language classes. Obviously there is a need for further research into the reasons underlying the rejection of modern languages by boys.

A number of researchers have investigated co-education versus single-sex schooling in an attempt to explain the differential distribution of the sexes between certain subjects. Research summarised by Dale (1974) suggested that girls in single sex schools were more likely to choose physics or physical science than their co-educated sisters. This view was confirmed by Ormerod (1981) who concluded that each sex when educated with the other is, at puberty, driven by developmental changes to use subject preference and, where possible, subject choice as a means of asserting its sex role. If we accept the inevitability of widespread co-educational secondary schooling, the only solution to this problem must lie in the postponement of radical subject choice until beyond the age of sixteen, when young people are more secure in their gender identity and perhaps less vulnerable to peer group pressure. While some schools took the initiative by introducing a broad core curriculum throughout the fourth and fifth year, for others the imposition of the National Curriculum was necessary to bring about change. However, making more subjects

compulsory is not necessarily the solution to the problem.

As Driver et al (1984) pointed out,

> *"compelling all pupils to continue with subjects they have no natural motivation to pursue will not by itself bring about change in attitude and learning - indeed, without accompanying changes in the teaching of the subjects such a policy may even be counterproductive".*
> (Driver et al, 1984)

It must be stressed that the students participating in this study made their initial choice of subjects at a time when option systems, as outlined in Section 5.3, were the norm in English secondary schools. In support of such option systems, it must be pointed out that there is a considerable body of evidence to suggest that the subject choices made at age thirteen or fourteen may well be the result of long-standing interests and attitudes. Research by Lovell and White (1958) suggested that subject choice was affected to some extent by early influences, in particular the interests of parents. Hutchings (1963) shared this view and suggested that early scientific interests may strongly affect subject choice. Research by Kelly (1981) showed that the scientists from a sample of thirteen year old boys,

> *"had long-standing attitudes favourable to science which were formed more than two years earlier, whilst non-scientists did not make up their minds until nearer the time of choice".* (Kelly, 1981)

Similarly Musgrove and Batcock (1969) found that the career decisions of science specialists were not only made at an earlier age than those of social scientists, but they were also more stable.

In terms of cognitive development, McFarlane-Smith (1964) implied that the bias, either verbal or spatial, which predisposes a child to either arts or science interest was manifest by the age of eleven. Certainly early research by Hudson (1966) appeared to delineate two types of clever schoolboy by late adolescence: the converger who performed better on intelligence tests than open-ended tests, and the diverger for whom the reverse was true. Typically the convergers were science specialists, while the divergers specialised in arts.

Examination of personality traits has led to the accumulation of a similar wealth of evidence for the polarisation of artists and scientists, most studies presenting the scientist as a stable introvert, and the artist as an extrovert with neurotic tendencies. With a few notable exceptions, Hudson's work being the most widely known, much of the research in this area focused on the personality characteristics of university or college students (McClelland, 1962; Singh, 1968; Wankowski, 1970; Child and Smithers, 1971). However, Solomons (1970) suggested that extraversion-introversion and neuroticism-stability traits can be measured and demonstrated well before the sixth form, possibly as far back as early childhood, perhaps even linked with some physiological basis.

If it is accepted that such cognitive and affective characteristics are the result of developmental processes,

which in turn predispose children to prefer particular subject areas at a relatively early age, educational planners are perhaps justified in their rejection of calls for the postponement of specialisation. This same line of thought also suggests that the process of subject choice could benefit from greater objectivity through the use of psychological testing to predict academic bias and so guide the choices to be made. However, Pitt (1973) pointed to the very small correlations obtained in Solomon's survey and postulates that these may be evidence for very small differences in personality and cognitive processes at the time of subject choice. He argued that these small differences are later accentuated by the type of training received; thus explaining the markedly higher discrepancies found between higher education students of different academic persuasions.

5.3 Option systems in the third year

Whatever the arguments about the timing of subject choice, the fact remains that prior to the introduction of the National Curriculum, many schools employed an option system which determined a major part of the curriculum for pupils in the last two or three years of compulsory education. The variation between schools, and even within schools, was such that it is extremely difficult to generalise the experience of pupils posed with the problem of subject choice. Nevertheless, there is a reasonably large body of research which attempted to examine the

salient features of the systems operated by, generally small, samples of schools.

Fourth formers were usually required to study a common 'core' of subjects which typically included English, mathematics, religious education and physical education. In a study of four schools by Reid et al (1974), this core accounted for between 38 and 50 per cent of the timetable. A study of just two schools by Hurman (1978) revealed cores which constituted 37.5 and 55 per cent of the curriculum, the latter core being extended to include science.

Typically, pupils selected, in addition to the core, between four and six option subjects which occupied approximately half of their timetable. The study by Reid et al (1974) found that these ranged in number from nineteen to twenty-three, a large number of subjects being common to all four schools participating in the survey. A later study by Pratt et al (1984) included schools with as many as twenty-eight subjects available, possibly reflecting the growth in the range of subjects provided by the examination boards, or alternatively increased provision of non-examination subjects. Certainly only the larger schools could make available such a massive range of options. Reid et al (1974) suggested that the provision of less usual subjects reflected the particular emphases, traditions and strengths of the schools. In addition, certain minority subjects, such as Hindi and Urdu, were sometimes included in response to local demand.

Several studies have identified important differences in the procedures used by schools to structure option choice. Of the four schools studied by Reid et al (1974), each had its own distinctive system, all ultimately being based on subject blocks. Similarly Pratt et al (1984) found that the majority of the 130 schools in their sample employed systems of selecting subjects from blocks. The rationale for grouping subjects was varied: sometimes it simply reflected the proposed timetable, in other schools the subjects were grouped in disciplines, and occasionally it was based upon supposed demand for particular combinations of subjects. In nearly all schools the option blocks were predetermined and fixed, few based this arrangement on pupils' expressed preferences.

Within any framework, numerous permutations existed which imposed further constraints on pupils' choice. Some subjects were linked, for example shorthand and typing; whilst others were mutually exclusive, for example woodwork and metalwork. Some schools required pupils to indicate their reserve preferences in case of over-subscription in particular subjects, so re-allocation could occur. Some schools distinguished between the options available to upper and lower ability pupils. A few took the process of selection even further by tailoring option forms to individual pupils by offering only those subjects in which teachers had given approval. Instances of all such restrictions are reported by Pratt et al (1984).

Many schools took steps to ensure that each pupil followed a 'balanced' curriculum, the means of achieving this goal generally being based upon 'compulsory options' or 'excluded combinations'. For example, all pupils might have been required to study science. The extensive study carried out by Pratt et al (1984) showed that only a third of the schools in their sample permitted pupils to take no science at all. Where science was a compulsory option, most schools allowed this to be biology or general science. This survey provided evidence that other areas of study, for example, foreign languages and creative subjects, could also be treated in a similar way: all pupils being required to select one subject in each of these three areas. Conversely, in some schools, pupils were forbidden a choice of more than two subjects in any particular area, thus forcing them to look elsewhere, and so preventing premature specialisation.

Nearly all schools offered subjects at a variety of academic levels - formerly O level or C.S.E., or sometimes non-examination. While some institutions allowed flexibility, with pupils traversing academic levels in different subject sets, many imposed limitations based upon pupils allocation to a particular stream or band earlier in their school career. In some instances, such limitations imposed severe restrictions on subject choice. Hurman (1978) found that, in one school, courses leading to O level provided 1254 possible patterns of choice, whereas courses leading only to school assessment resulted in just

96 patterns of choice. As she pointed out, neither of these figures is significant in itself, but their ratios are a useful indication of the degree to which choice is reduced if the absence of an examination at the end of the course is a deciding factor in selecting subjects.

However, a wider range of subjects to choose from was not necessarily commensurate with greater freedom of choice for more academic pupils. Barnard and McCreath (1970) suggested that the non-academic subjects were frequently casualties in the timetable of able pupils. Even when attention is focused on academic studies, they pointed out that only the best pupils could cope with the range of subjects needed to keep routes open to all main A level groupings. Reid (1972) concluded that schools were very clear about the demands that were being made upon them by the universities, and the strategies needed to cope. For many able pupils the strategy most frequently adopted was that which had been 'tried and tested', namely the selection of a narrow range of academic subjects chosen from within a single area of specialisation.

The inequalities of option choice were the subject of a detailed study of secondary modern pupils by Woods (1976). He concluded that there was an illusion of a range of choice, of selection delayed to the last moment, of a common starting line, and of common educational experience up to the end of the third year. He pointed out that, in fact, the range of choice was variable among the pupils,

non-existent for some; because of selection long before the third year. Different social origins lead to different educational experiences, the differences being reinforced by the prevailing pedagogical paradigm, with repercussions for what was taught to different groups. Woods (1976) claimed that despite meritocratic overtones, most pupils developed group perspectives; they knew their places, having internalized teacher definitions of success and failure. Thus Woods (1976) suggested that for the initiated, generally middle class pupil, subject choice was often a reality, and he or she made it carefully with a view to job, ability and prospects. In contrast, for the estranged, generally working class pupil, it was often the line of least resistance.

5.4 Overt influences on initial subject choice

Although option structures provide the most obvious parameters by which pupils select subjects, in order to gain a more complete picture it is essential to examine the experience of subject choice as perceived by the pupils themselves. How do they view their choices within the permitted framework?

One of the earliest studies in this area (Pritchard, 1935) investigated a very large sample of grammar school pupils' rankings of subjects in order of preference. The humanities were found to occupy the highest positions, whereas mathematics, languages and physics proved to be the least popular. A perusal of the reasons given for liking

or disliking subjects led Pritchard to conclude that, above all, secondary pupils looked for human interest in their subjects. This view was supported by Lovell and White (1958) who suggested that science has little appeal to many children (especially girls) since it is impersonal, it tells no story and has no characters with whom children can identify. They suggested that a more humanistic approach during early secondary education might encourage scientific interest. Over the years this view has repeatedly been endorsed by researchers concerned about the dwindling number of science specialists (Ashton and Meredith, 1969; Ormerod and Duckworth, 1975), in particular the number of girls turning away from science (Kelly, 1981 and 1987).

Most recent studies have identified subject interest as a major factor in subject choice. Reid et al (1974) found that in each of the four schools they investigated, subject liking/interest was given as one of the main reasons for choosing subjects. Similarly Ryrie et al (1979), in an extensive study of Scottish pupils, showed that the biggest single number of choices made by second year pupils were explained simply in terms of interest in or liking for the subject.

Closely allied to subject interest is the influence of subject presentation. A study by Pheasant (1961) showed that the majority of early school leavers dropped those subjects which had not been attractively presented, at the earliest possible opportunity. In the sample as a whole,

including those who stayed on, the largest single reason for disliking subjects seemed to be unsatisfactory pupil-teacher relationships in the classroom. The composite picture drawn from responses to the questionnaire and from interviews seemed to be that pupils wished for:

> *"a firm but understanding teacher who would maintain discipline and promote an atmosphere in which they could work. He should know his subject and be able to 'put it across'; he should be interested in the pupils and their problems and should be ready to help them when they were falling behind; he should be worthy of their respect and should treat them as young adults rather than children"*
>
> (Pheasant, 1961)

Despite the obvious merits of Pheasant's model teacher, there is evidence to suggest that he goes too far in regarding the acceptability of the teacher as a major factor in subject choice. Certainly the earlier study by Pritchard (1935) suggested that the popularity or otherwise of the teacher was not a major influence in determining which were the best liked and the least liked subjects. More recent studies have provided further evidence to support this view. For example, Ormerod (1975) reported only weak relationships between subject choice and teacher liking. Similarly Kelly (1961) claimed that the influence of the teacher was minimal, the nature of the subjects themselves being more important. It is possible that much of the early confusion surrounding this issue arose from the failure of some researchers to pay adequate regard to school size and its consequences for staffing of subjects offered as options. In a small school a subject may be

taught by just one teacher, whereas a large school may have six or more involved in the teaching of a single subject at fourth and fifth year level. Thus size of school has obvious implications for the interpretation of pupils' expressed preferences. Keys and Ormerod (1979) pointed out that subject choice may be relatively independent of teacher liking for the simple reason that pupils often do not know which teacher will be taking them next year. Nevertheless, liking of a subject may be linked to the teacher who is *currently* teaching it.

When teacher influence is considered in terms of the advice given to pupils, it is apparent that there is considerable variation between schools, not only in the amount of advice available, but also in its impact upon the pupils. All the schools in the study by Ryrie et al (1979) provided an opportunity for pupils to receive advice or guidance from teachers, but not all had a systematic arrangement for individual interviews. Where this was absent, it was found that few pupils took the initiative to arrange such consultation for themselves. Hence few pupils or parents thought that teachers exerted much influence on choices by direct guidance. Similarly Hurman (1978) reported that house tutors did not play a very large part in the options system, for the most part neither seeing themselves nor being seen by the pupils in the role of counsellor. Donnelly (1983) however, whilst acknowledging the negligible role of careers teachers in subject choice, claimed that subject teachers, and sometimes year teachers,

can exert considerable influence. Reid et al (1974) supported this view, suggesting that the pattern of pupil response to their questionnaire reflected the pastoral system adopted within the school. In particular, they remarked upon the apparently important role played by subject teachers, in all their schools, in guiding pupils. Thus it would seem that the most important criterion in this context is probably the closeness of the pupil-teacher relationship, pupils preferring to turn to those teachers they know personally (Donnelly, 1983).

The supposed importance of personal relationships leads to the suggestion that pupils may be strongly influenced in their choice of subjects by relatives and friends. Research by Kelly (1961) provided evidence to the contrary: the sample of boys from one grammar school indicating that they felt they had made their own choice, influences outside the school being few and vague in effect. More recent research, based largely on co-educational comprehensive schools, suggested that the situation may be different for a less homogeneous group. Certainly Reid et al (1974) reported that parents were cited by far the most frequently as the most important source of help, this being true for all four schools in the survey, regardless of the ability of the pupil. Similarly Hurman (1978) reported that the pupils in her study claimed to rely mainly on their parents and family for advice, with friends and pupils in other year groups being a supplementary source of information. More recent research by Donnelly (1983) also

indicated that parents were much more influential than teachers. If the majority view is accurate, namely that parents are influential in subject choice, it would be propitious to take advantage of the situation. With this in mind, Donnelly (1983) suggested that careers information may be best directed at parents if we are to maximise its assimilation by pupils.

The study by Ryrie et al (1979) found that of three main reasons given for subject choice, usefulness of the subject for future career, although cited less frequently than other reasons, stood out as one of the most clearly perceived and felt. The relevance of subjects to future employment was also identified as a major criterion by Reid et al (1974), but once again this reason was subordinate to interest. The 'career value' criterion can clearly not be applied equally to all subjects: Ryrie et al (1979) reported that mathematics and sciences were the subjects most frequently chosen for this reason. Despite the apparent importance of the career value of certain subjects, Reid et al drew attention to the fact that a substantial proportion (32-40%) of pupils in their study had not made definite career decisions. This was particularly true for pupils of above average ability, probably reflecting their intention to continue in full-time education for some years, so allowing the deferment of career decisions. Although there has been no major study in this area in recent years, it is possible that the gulf between the 'career value' and 'interest value' of subjects

widens when reduced employment prospects subjugate the validity of early career decisions.

The specific nature of 'career value' as an influence on subject choice would seem to positively implicate traditional assumptions about the general usefulness of certain subjects, and by corollary, the inferiority of others. Work by Harvey (1984) supported this view, showing clearly that pupils considered the traditional 'academic' subjects to be more important than those which were essentially practical. Thus art and craft subjects were considered amongst the least important, while English and mathematics were rated highest; humanities and foreign languages generally being considered less important than the sciences.

The two final factors to be considered are pupils' perception of the intellectual status of different subjects and their own academic self-concepts as determinants of subject choice. The results of several studies have provided a general consensus of agreement that the physical sciences and foreign languages, particularly Latin and Greek, were amongst the most difficult school subjects (Forrest, 1971; Forrest and Smith, 1972; Nuttall at al, 1974); and were perceived as such by pupils (Keys and Ormerod, 1979). However, despite such concordance, the results of the study by Reid et al (1974) suggested that the perceived easiness of a subject was not a major factor

in subject choice, but when cited, was voiced most frequently by above average pupils.

Pupils' perception of their own ability in a subject has similarly been largely rejected as a major overt factor in subject choice. Ryrie et al (1979) reported that only 8% of choices were said to have been made because the pupils felt they were 'good at' the subject in question. Reid et al (1974) found that although this reason was given less frequently than others, it was cited most frequently by the above average group. However, it must be borne in mind that any interpretation of such expressed beliefs invariably take no account of individual differences in modesty or accuracy of personal assessment. In addition, Ryrie et al (1979) quite validly suggest that many pupils tend to like the subjects they are good at, so 'liking' and being 'good at' may be synonymous in many cases.

5.5 Overt influences on subject choice at A level

Having negotiated the hurdles of initial subject choice, pupils have the two final years of compulsory schooling to ponder the question of continuing their education beyond the age of sixteen. This section is concerned solely with those who elect to remain within full-time education and follow the A level route, the vocational alternative being beyond the remit of this study.

For some pupils who opt for A levels the choice of subjects poses little dilemma because of a limited range of

success in examinations at 16+ and the insistence of many schools and colleges that students must have a pass at O level, or equivalent, in order to gain admission to an A level course in that subject. For other pupils choice is restricted because of deliberate specialisation earlier on. This was one of the central concerns of the Dainton Report (Council for Scientific Policy, 1968). As Phillips remarked in 1969, it is highly unlikely that pupils would change from specialising in arts at O level to sciences at A level. For pupils who have specialised in the fourth and fifth year, the choice of subjects at A level is limited, particularly for those who specialised in sciences. However, for those who have followed a more balanced programme there is a very real choice to be made. These decisions are important because they will impose further, perhaps final, limitations on the type of career that can be followed. In selecting subjects for study it seems likely that, as for initial subject choice, a number of influences are involved.

One of the earliest studies of subject choice in the sixth form used "*common sense in the form of the experience of school masters*" to propose influences such as career value, parental pressure and the quality of teaching (Peterson, 1960). A later study of one hundred and fifty three grammar school boys and girls (Wilkinson, 1967) produced results which indicated that the subjects which fifth form pupils would like to take in the sixth form, given a free choice, were those which they enjoyed most and

at which they considered themselves best. However, Wilkinson pointed out that these criteria may not be the most appropriate for the attainment of future academic success. He suggested that choice of course should also be based on the hard reality of examination success.

In 1968, research by Hockey and McKim investigated a wider range of possible influences and found that for their sample of one hundred and forty boys in the lower sixth at Marlborough College, the dominant factor in their choice of A level subjects was their interest in the subject at O level. Other considerations which ranked fairly highly were prospects for an interesting and varied job, ability in the subject up to O level, and the influence of parents or housemaster. The influence of boy upon boy was found to be limited in this context.

In a much larger study by McNair (1970), over nine hundred grammar school pupils were required to select and rank from a list of nine items the three factors which they thought had most influenced them, and the two they thought had influenced them least. Broadly speaking all pupils rated as most important: interest and enjoyment, success and competence, and the importance of the subject for university or career. Least important were: whether friends were taking the subject, and liking for or dislike of a teacher or teachers. Further analysis in terms of subject specialisation showed that science choosers were more influenced by the importance of career or university

(66% of science choosers referred to this, 52% arts choosers, 51% mixed subject category). A somewhat higher proportion of science choosers attributed importance to parental approval (11% compared to 5% of arts choosers, and 7% of mixed subject category), but numbers here were small.

A variable that has been overlooked in many investigations, perhaps because of its delicacy, is the quality of teaching available. Where such information has been sought, the influence of teaching quality has generally been found to be minimal (Kelly, 1959; Meyer, 1959; Rowlands, 1961). However, the results of a study by Pheasant (1961) suggested that noticeably indifferent teaching had a considerable negative effect on choice of science.

When interpreting the results of these early studies of subject choice, it must be borne in mind that the pupils involved invariably belonged to an academically select group. Hence one must be cautious in extrapolating these findings to the situation pertaining today. A level education is now available to a larger, more diverse clientele, in a wider range of institutions, many of which cater solely for the 16-19 age group (the current provision of A level education is described in detail in Chapters 2 and 3).

Of the more recent studies in the sphere of subject choice at this level, one of the most extensive to date is

that conducted by Ryrie (1981). The results suggested, that for his sample of three hundred and seventy-eight Scottish students who had completed the fifth year, decisions about subjects were based firstly upon the likelihood of obtaining a pass in the subject. The necessity or usefulness of a subject for courses in higher education was seen as an important criterion by just over a third of students, and a similar proportion spoke of the usefulness of particular subjects for employment. More than half of the students had not consulted any teacher about their choice. Less than a third said that their parents had made any suggestions about subjects they should take.

It must be stressed that the results of the study by Ryrie (1981) are probably not directly applicable to young people in other parts of the UK. The constraints operating on Scottish pupils are such that their actual choice of subjects is limited. Ryrie (1981) concluded that, in practice, the choice of subjects for fifth year was very largely determined by the decisions made two years earlier about subjects to be studied at O grade, and the results of these examination at the end of the fourth year.

A study by Backhouse et al (1982) investigated various aspects of the decisions made by six hundred and fifty-nine fifth year pupils in Oxfordshire schools concerning their choice of A level subjects, with particular reference to mathematics. The results of this study suggested that the

quality of the teacher teaching the subject at A level was clearly one important consideration for pupils in choosing A level subjects. It was also noted that family and friends were involved in discussions about subject and career choices for many pupils. In this context it was concluded that family influence was inevitable but friends appeared to have less influence, although choices were discussed and compared. Pupils who expected to study mathematics at A level (n=125) gave as their commonest reasons some link with career plans, an expression of interest in the subject, and an indication that they were good at it. Many pupils felt, perhaps in response to advice, that it was desirable to choose subjects that "go together" (Backhouse et al, 1982).

In the follow-up to the earlier phase of their research project Backhouse et al (1982) administered questionnaires to 153 of the above pupils who had actually started A level courses. Success in the subject was identified as one of the main reasons given for choosing a subject at A level. For all five subjects investigated (mathematics, physics, biology, English literature and French), over half of the students agreed with the statement "I chose this subject because I was good at it". Analysis of associations with other statements revealed that, as expected, success in mathematics was associated with interest in the subject. However, for mathematics just less than 60% showed agreement with the interest statement, "I chose this subject because I was interested in it", as compared to

over 80% for all the other subjects investigated. The inference being that compared to other subjects, mathematics is frequently chosen less for interest and more as a support subject. This view received support from an analysis of students responses to the statement "I chose this A level to help another A level". Here 31% of mathematics students agreed with the statement, compared with 15% or less for the other four subjects.

In response to the statement "I chose this A level because I need it for my job", the greatest agreement was found for physics followed closely by mathematics, with English literature students agreeing the least. However, the fairly large numbers disagreeing with this statement led Backhouse at al (1982) to suggest that many pupils are not concerned with job choice when they choose their A levels.

Other influences investigated by Backhouse et al (1982) included parents, friends, subject teachers and careers advisers. Approximately a third or more of the students indicated that parents and subject teachers had been influential. Relatives and friends were least influential.

A study involving 177 tertiary college students (Garratt, 1985) confirmed many of the major findings of the study by Backhouse et al, namely that the most influential variables affecting subject choice at A level include interest value of the subject and previous success in the subject. In

addition the study by Garratt, in contrast to that by Backhouse et al, identified career value as a major influence for fifty-five per cent of the students. The discrepancy between these findings can perhaps be attributed to the wording used in the questionnaires: Garratt referring to "career", which could conceivably include further or higher education leading to employment, and Backhouse et al referring specifically to "job".

From this brief review of the literature on variables affecting subject choice at A level it seems that although the influences are apparently numerous, their weighting is variable between different subject areas, and several may not in fact be discrete entities. Such complexities suggest that the nature of subject choice does not readily lend itself to simple investigation and interpretation. Nevertheless, the importance of the issue is such that educationalists, at both research and planning levels, cannot afford to be neglectful. With these thoughts in mind the present study sets out to investigate the relative importance of fifteen variables for each of twelve A level subjects. The results are reported in Section 8.2. Subsequent analyses in terms of academic ability, type of institution attended and gender, are reported in Sections 8.3, 8.4 and 8.5 respectively.

5.6 Gender and subject choice

Government statistics show that girls consistently attain a slightly higher proportion of passes than boys in

examinations taken at 16+ (DES, Statistics of Education, 1987, 1988b, 1989). However, females accounted for slightly less than half the A level entries made through the Joint Matriculation Board in 1988 and 1989, the percentages being forty-eight and forty-nine respectively (JMB, 1989, 1990). JMB statistics are quoted here as this is one of the largest A level examining boards and was the most frequently used by the schools and colleges in this study.

Inspection of subject entries made through the JMB for examination in 1988 reveals that the representation of the sexes varies widely between subjects. For each of the twelve subjects in this study the proportion of girls was as follows: English literature 74.4%, mathematics (pure and applied) 30.3%, physics 22.8%, chemistry 40.1%, biology 57.4%, French 76.4%, German 74.3%, geography 40.8%, history 57.6%, economics 42.0%, sociology 72.3%, art 66.7% (JMB, 1989). Data for 1988 are quoted here because this was the year that the students in this study took their examinations. It is apparent that girls' entries dominate arts, sociology and language subjects, whereas boys entries dominate mathematics and the physical sciences. Such statistics have prompted a number of studies which have investigated various aspects of subject choice in terms of gender. Some of those pertaining to initial subject choice are discussed in Section 5.2. This section is concerned solely with investigations of subject choice at A level.

A number of studies have been concerned with the perceived masculinity/femininity of certain subjects, particularly the masculinity of science and the femininity of languages, but much of this work relates to initial subject choice which takes place at a time when pupils are more vulnerable in terms of their gender identity (see Section 5.2). Kelly (1985) reviewed a number of papers concerned with the inherent masculinity of science and identified those features which actively discourage girls and women from studying science: namely its abstract, analytic, objective and controlling nature. She suggests that the masculinity of science is socially constructed, masculinity being associated with detachment and objectivity, and current conceptions of science being a development of this (Kelly, 1985).

In a study of almost 1, 900 lower sixth formers in twenty schools, Smithers and Collings (1981) found that girls studying science rated themselves significantly more masculine than those studying arts. All groups of students rated their same-sex peers studying science as more masculine than those studying arts. Unfortunately this study takes no account of students' perceptions of each others sexuality prior to specialisation.

Although many studies have investigated variables affecting subject choice at A level, relatively few have included an analysis in terms of gender. Those that did have revealed a small number of interesting differences.

For example, Garratt (1986) found that although the interest value of subjects was of primary importance for both sexes when choosing A levels, female students placed significantly more importance on this variable than their male counterparts. Similarly Collings and Smithers (1983), in a study confined to science students, found that male physical scientists did not seem to have been influenced by interest as much as girl physical scientists. In contrast to the above studies, Backhouse et al (1982) found very little difference between the sexes in terms of the interest scale for choice of mathematics at A level.

The Backhouse study did, however, find a very marked difference in the responses from the two sexes to the scale concerned with students' previous success in mathematics, with more boys agreeing with the statement "I chose this A level because I was good at it".

Although there has been little research in this area, the evidence outlined here suggests that gender differences in the variables affecting choice are worthy of further investigation. The results relating to this part of the present study are outlined in Section 8.5.

5.7 The theoretical basis of choice

This section is concerned with various aspects of decision theory. This theory attempts to predict choice on the basis of the individual's beliefs about the probabilities of various outcomes of each of the

alternatives he or she considers open to him or her, and his or her evaluation of those outcomes (see Vroom, 1964). Much of the knowledge in this sphere has developed outside psychology as a result of the work of mathematicians, economists and philosophers. The historical development of the theory of decision making is the subject of a comprehensive review article by Edwards (1954). A later paper (Edwards, 1961) reviews the multitude of books and papers that were published in the late 1950s and early 60s. Since that time it seems that interest in this domain has waned, nevertheless it is apparent that the work of these early social scientists has provided a useful body of theory to explain the basis of decision making. Amongst this work, and later work on occupational choice, there is a substantial body of psychological research which may be usefully applied to the process of subject choice as experienced by young people in schools and colleges.

Decision theory has been widely applied to occupational choice, which is obviously closely allied to, and is often the natural sequel of, subject choice. Mitchell and Beach (1976) outline the two main approaches to the study of occupational choice. The **normative approach** is concerned with how decisions ought to be made. A mathematical model prescribes (for specific circumstances in which the model's assumptions hold) the kinds of information that should be used, ways in which it should be evaluated and combined, and a criterion for determining the final choice. In contrast, the **descriptive approach**, as in this study, uses

interviews, questionnaires or self-reports to examine how people *actually* make their choice. Mitchell and Beach point out that these approaches interact with one another and, in so doing, are contributing to an increasing body of practical knowledge.

In essence, the fundamental principle of decision theory is the principle of maximisation of expectation. This principle prescribes that the action that has the maximum expectation should be the one chosen. Two classes of variables are important in this context, namely probability variables and utility variables.

In terms of occupational choice the individual assesses his or her subjective probabilities that each occupational alternative being considered would lead to various job outcomes (e.g. pay, promotion, autonomy etc), and also the value he or she attaches to gaining or failing to gain each outcome. Having made this assessment for each occupational alternative the individual should choose the alternative with the maximum subjective expected utility (SEU) (Mitchell and Beach, 1976). In summary, this model weighs the utilities of the outcomes by their subjective probabilities of occurrence. Thus, according to Mitchell and Beach, the SEU for a possible course of action, such as choice of occupation, may be calculated as follows:

$$SEU_i = \sum_{k=1}^{n} (\Psi_k U_k) + (1-\Psi_k) (-U_k)$$

where
i = choice of occupation
Ψ_k = the probability that outcome k will occur if action i were selected
U_k = the utility of receiving outcome k
$1-\Psi_k$ = the probability that outcome k will not occur if action i were selected
$-U_k$ = the disutility of not receiving outcome k

The application of decision theory to occupational choice has generated a good deal of discussion. For instance, it has been criticised for ignoring individual decision styles (Arroba, 1978); for representing occupational choice as a one-off decision; for implying that decisions are based solely on a rational and conscious analysis of costs and benefits; and for excluding social pressures as a determinant. Herriot et al (1980) argue against some of these objections, claiming for instance, that people merely need to be *capable* of being conscious of the bases of their decisions and that these need not actually be rational, as in the example of an individual who believes certain options to be open to him, when objectively they are not.

It seems likely that some of the confusion that surrounds such arguments may lie in the ambiguity of the terminology being used. For instance, Vroom (1964) emphasises the importance of the distinctions between occupational preference, choice and attainment. Mitchell and Beach (1976) distinguish between these terms as follows:

> *"When we speak of **preference** for an occupation, we are describing an attitude. Occupations presumably vary in their attractiveness to different people, and an evaluation of occupational attractiveness is frequently called a preference. These preferences, however, may be different from the individual's actual **choice** of an occupation. We would expect them to be related to one another, but because of family pressure, economic conditions or one's own abilities, the chosen occupation may be very different from the preferred one.*
>
> *Even when the individual prefers an occupation and chooses to try to enter it, there are cases where the attempt is unsuccessful. Occupational **attainment** refers to the occupation in which the individual currently or eventually resides."* (Mitchell and Beach, 1976)

Both of the above distinctions (between preference and choice; and choice and attainment) imply a frequent need for compromise in the decision-making process.

According to Gottfredson (1981) occupational aspirations are the direct consequence of the individual's self concept and his/her perceptions of the world of work. These personal and occupational perceptions are the result of the person's developmental experiences, and become the focus of his/her attention in late adolescence while making a choice of career. As a consequence of developmental experiences, people develop views of themselves in terms of what is appropriate to their sex, social status and psychological characteristics. They also establish a common understanding of occupations along the dimensions of sex, prestige and psychological characteristics. Gottfredson (1981) refers to this as the "cognitive map of

occupations". During the development of this understanding individuals progressively restrict or circumscribe the acceptable occupational alternatives that they will consider; firstly in terms of sex, next in terms of prestige, and lastly in terms of psychological characteristics. As a consequence, each person arrives at a range of acceptable occupational preferences based on job-self compatibility.

Gottfredson (1981) suggests that at this point the individual seeks to implement his/her most favoured choices in the range of acceptable alternatives according to his/her perceptions of each occupation's accessibility. If no jobs are perceived as accessible, the person is forced to compromise. This results in a widening of alternatives again, since it in effect reverses the process of circumscription. This compromise process takes the form of foregoing, in the first instance, psychological characteristics. If this does not facilitate access to an occupation the individual will next forego prestige considerations. Finally, if this also fails, then the person will relinquish sex-type. According to Gottfredson (1981), it is comparatively rare for a person to have to give up his or her sex-type perceptions in order to obtain a job.

Since the publication of Gottfredson's formulation of the process of compromise, some researchers have undertaken investigations of the basic dimensions of career

compromise. For instance, Taylor and Pryor (1985) investigated the career compromise plans of 287 college students in Australia who were seeking entry to a tertiary institution. The results, in general terms, supported Gottfredson's characterisation of "the cognitive map of occupations", but cast doubt upon his simplistic view of compromise. About half the sample did not specify a compromise strategy, and of those who did, some students elected for similar courses at a lower level of prestige, while others chose to repeat their current course if necessary, suggesting that they were unwilling to compromise.

Later research by Taylor and Pryor (see Pryor, 1987) revealed some interesting differences in the compromise strategies of males and females. Females were more likely to choose and compromise in accordance with their interests, whereas males tended to favour prestige over interests. Although maintaining sex type seemed to be important for both genders in choice and compromise, the results suggested that males were more sex-typed in that the sex-type range of compromise choices they made was significantly narrower than that of females.

In a later analysis of these, and other, research findings Pryor (1987) noted that the evidence overall favoured the relevance and influence of the three Gottfredson compromise dimensions of interests, prestige and sex-type. However, Pryor suggested that the theory was

too simplistic in its formulation of the compromise process and elaboration was necessary to encompass more than one compromise paradigm, the interrelatedness of the dimensions of the cognitive map of occupations, refusal to compromise and sex differences in compromise priorities. Pryor concluded that compromise was an essential concept in career decision-making and hence should not be neglected. It is possible that the same may be true of subject choice decision-making as experienced by young people in schools and colleges.

Having gone through the decision-making process, either with or without the need for compromise, the individual commits himself or herself to one, or more, of the alternatives being considered. The concept of commitment, in this sense, implies the pledging or binding of oneself to a course of action. This indeed was the behavioural definition adopted by Kiesler and Sakumura (1966): "*The effect of commitment is to make an act less changeable.*" However, it should be noted that commitment is a continuous variable, so people may be more or less committed to some behaviour, rather than being simply committed or not (Kiesler, 1971). Kiesler goes on to hypothesize that one may increase the degree of commitment by increasing one or more of the following:

1) the explicitness of the act

2) the importance of the act for the subject

3) the degree of irrevocability of the act

4) the number of acts performed by the subject, assuming that they are additive in some way
5) the degree of volition perceived by the person in performing the act.

All of the above would seem to be potentially applicable to the commitment made by young people when choosing subjects for study in school or college.

According to dissonance theory (Festinger, 1957) all decisions or choices result in dissonance because the alternatives not chosen contain certain positive features which make them attractive, and the chosen alternatives contain negative features. Because dissonance is "psychologically uncomfortable" a person "*will try to reduce dissonance and achieve consonance*" and "*will actively avoid situations and information which would likely increase the dissonance*" (Festinger, 1957).

The magnitude of the dissonance depends on the situation pertaining to choice. Forced compliance decisions arise when situational pressures induce the person to behave in a way that is counter-attitudinal. Obviously such decisions result in a substantial degree of dissonance. However, free-choice decisions are not necessarily free of dissonance, for example, if two alternatives are almost equally attractive, the choice will result in considerable dissonance i.e the less justification one has for choosing

one or the other alternative, the greater the dissonance (Zimbardo et el, 1977).

Because dissonance causes a psychological tension created by inconsistency, there will be a need to reduce dissonance. This often takes the form of seeking evidence to confirm the decision, for example, increasing the attractiveness of the chosen alternative and decreasing the attractiveness of the rejected alternative (Brehm, 1956).

From this review of some of the many facets of decision-making, it is apparent that there is a substantial foundation of theoretical knowledge which probably has many useful applications to the decision making process pertaining to subject choice. A discussion of the application of such theory in this context is included in section 11.1.

Chapter six

Student perceptions of academic courses

A review of the literature

6.1 Introduction

During the past thirty years there has been a growing interest in educational environments and, more recently, how they relate to learning. For example, the work of Becker et al (1961, 1968) in America, Marton et al (1984) in Sweden, Fraser (1976, 1982) in Australia, and Entwistle and Ramsden (1983) in Britain. Such studies have provided useful insights into the academic perspectives of pupils in schools and students in higher education.

Of those studies concerned with the perceptions of children in schools, many have tended to focus on educational settings, in particular classroom environments. In Britain, the majority of studies in this area have in the past been based largely upon observation, interviews and analysis of essays written by pupils (see Cohen and Manion, 1981, Chapter 5). More recently Entwistle and Ramsden have extended their work from HE to the level of the secondary school. This has resulted in the development of an inventory to measure pupils perceptions of school and teachers (Entwistle et al, 1989a) for use with 12-15 year olds; and also an inventory for use with sixth formers (Ramsden et al, 1989). Outside the UK, particularly in America and Australia, there has been a much longer-standing tradition of using questionnaires to collect pupils' subjective descriptions of learning environments.

Such studies are comprehensively reviewed by Fraser (1986) who concluded that classroom characteristics such as order and organisation, cohesiveness and goal direction seemed to have a consistently positive influence on pupil achievement.

At the level of higher education the majority of studies have concentrated on students' perceptions of their courses and/or the academic environment of whole colleges, rather than the more specific environments of individual classrooms. Much of the early work in this sphere was American, and used either the technique of participant observation, for example, Becker et al (1961, 1968), or inventories, for example, Pace and Stern (1958), to examine students' perceptions of academic environments. More recently, a number of studies have been conducted outside the United States, for example, Gaff et al (1976) in the Netherlands, and Entwistle and Ramsden (1983) in Britain. The general consensus of this research led Ramsden (1989) to conclude that the literature demonstrates beyond reservation

> *"the crucial roles of good teaching, coherent structure, emphasis on autonomy, and appropriate workload in encouraging learning".* (Ramsden, 1989)

Despite the plethora of research in this area, both in schools and higher education, an extensive review of the literature revealed a paucity of research into the perceptions of students at the interface between schools

and higher education, namely, in Britain, A level students in the sixth forms of schools and their contemporaries in colleges of various types. One of the objectives of this study (Section 1.2) was to fill this gap. The development of the instrument is described in Section 7.4.5. The "Course Perspectives" instrument was administered to a large sample of A level students, in twenty-six different institutions, at the beginning of their course and also on three subsequent occasions, with the intention of providing an insight into any changes that occurred in students' perceptions as they passed through the two year course.

The paucity of research at the upper secondary school level, coupled with the closer proximity of this research, in terms of the age of the student cohort, to that carried out in higher education, suggested that this literature review should be restricted solely to research at undergraduate level and sixth form level.

Before embarking upon a discussion of the studies themselves, it is useful to consider some of the terminology that has been adopted within this sphere. One of the earliest studies in this area was carried out by Becker et al (1961), using mainly the method of participant observation, to discover what medical school did to students other than giving them an education. One of the major concepts to dominate their analysis was that of **perspectives**, defined by Mead (1938) as co-ordinated views and plans of action people follow in problematic

situations. According to Becker et al (1961) the definition of perspectives includes actions as well as ideas and beliefs. The actions may flow from the beliefs, or the beliefs may be developed to justify the actions. Thus neither are specified as prior and/or causal. Becker suggests that a person develops and maintains a perspective when he faces a situation calling for action which is not given by his own prior beliefs or by situational imperatives. In short, perspectives arise when people face choice points. However, as Becker points out, a situation will not present the same problem to all people - the immediate situation is problematic only in terms of the perspective the individual brings to bear upon it.

Becker (1968) divides perspectives, analytically, into several components. Firstly, they contain a **definition of the situation**, a set of ideas describing the character of the situation in which action must be taken. Despite the individuality of perspectives, as outlined above, Becker claims that students share an understanding of what their world is like, what it allows them to do, what it insists that they do, and an understanding as well of why they are in that situation and what they can reasonably expect to get out of it (Becker et al, 1961). Secondly, perspectives contain a specification of the kinds of **activities** one may properly and sensibly engage in, and also those that are seen to be inappropriate. Given the situation as they perceive it, certain actions seem to students to be acceptable ways of dealing with the problems posed by their

environment. Finally, perspectives contain **criteria of judgement**, standards of value by which people may be judged. Since the definition of the situation contains a statement of the rewards available, students in an academic environment can use the distribution of those rewards as a criterion of judgement. They may judge those who distribute the rewards - their teachers, but also those in receipt of rewards - themselves and other students (Becker et al, 1961). In addition, although this is not mentioned by Becker, it seems likely that students may also judge the rewards *per se*.

Thus, according to Becker et al (1968), the several aspects of the perspective form a coherent whole in the everyday commonsense world of the student. The perspective is not an explanation of student activity; it is simply a description of what students do and think.

This study, like those of Becker et al (1961, 1968), is concerned with the immediate short-term perspectives that students develop on embarking upon a new course of study in a new situation. Such immediate perspectives may be distinguished from the long range perspectives that brought the individual into the immediate situation, for example, a need to study A levels in order to progress to higher education.

Although, as already noted, a situation does not present the same problem to all people, in an institutional setting such as a school or college, Becker suggests that it seems likely that common problematic situations, when coupled with the constraints imposed by the institution, will give rise to collective modes of thought and a common approach to the problem. Such **group perspectives** were described amongst American university students in the two studies by Becker et al (1961, 1968).

In order to understand the phenomenon of group perspectives it is necessary to make recourse to social psychological theory, in particular the concept of symbolic interaction as propounded by Dewey (1930), Mead (1934) and Cooley (1956). This stresses the more conscious aspects of human behaviour and relates them to the individual's participation in group life. It assumes that human behaviour is to be understood as a process in which the person shapes and controls his conduct by taking into account the expectations of others with whom he interacts. Thus according to Becker et al (1961) group perspectives refer to "*modes of thought and action developed by a group which faces the same problematic situation*".

When people see themselves as belonging to the same group, they share their concerns and their provisional answers to questions about the meaning of events and how one should respond to them (Becker et al, 1961). So students not only use the perspective, but use it with the

knowledge that their fellow students also use it. In the words of Woods (1984) group perspectives develop and gain strength as a result of group interaction.

Despite the collective nature of perspectives Becker et al (1961) acknowledge that a perspective may not always be apparent in all individuals. Some students may not use a perspective because they have not yet learned it. Others may use the perspective when in public, but deviate from it in private. Becker et al suggest that the latter type of behaviour confirms the proposition that the perspective is a collective phenomenon.

The concept of **perspectives** is in some respects similar to those of **values** and **attitudes.** These concepts themselves provoke a good deal of discussion. Gagne (1985) suggests that attitudes may be regarded as internal states that influence the individual's choices of personal action. One useful definition that has stood the test of time (Gagne, 1985) is:

> *"An attitude is a mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related"* (Allport, 1935)

Some investigators make no distinction between attitudes and values. Others consider that **value** is a name given to a social attitude that enjoys widespread societal acceptance (Gagne, 1985). According to Becker et al (1961) perspectives differ from values in being situationally

specific - they are related directly to the dilemmas faced by an individual. Values need have no such direct connection. Perspectives may be distinguished from both values and attitudes by the fact that they include actions as well as ideas. They are further distinguished by their collective character (Becker et al, 1961).

6.2 American studies of student perspectives of higher education

Some of the early work on perspectives was carried out using the techniques of participant observation, discussion and structured or partly structured interviews to examine the perspectives of students in higher education.

The first major study by Becker et al (1961) was concerned solely with medical students at Kansas University. This research identified a number of perspectives which became apparent at different times during the first year of the course. Becker's description of some of these perspectives may be summarised as follows:

The **initial perspective** is immediate and situational. It consists of the students' definition of their present situation, the goals they set for themselves in it, and the activities they undertake in it. Because the students are not familiar enough with their new environment for it to influence their perspective, the initial perspective is simply an application of their current ideals to the new situation. The major theme that dominates the initial

perspective is work. In the first few weeks the perspective used includes acknowledgement of the tremendous amount there is to learn, working hard and wanting to learn everything.

During the period covered by the **provisional perspective** the students define their situation as one in which they cannot learn everything in the time available. However, they do not yet know each other sufficiently well to collectively develop a group perspective that solves the problems presented. This will follow later. In the meantime the perspective is provisional in that some students select what to study according to its perceived importance or relevance to the future, and others select what they feel the teachers will want them to know. In being selective students make judgements about areas of knowledge they consider to be important or to be a waste of time. They may also select ways of studying: for instance, the choice between memorizing and "thinking" about their work. Memorization is often chosen because it takes less time.

During the second half of the first term Becker found that the provisional perspective was succeeded by a **final perspective** on academic work. Like the others, the final perspective is an outgrowth of previous perspectives closely related to the immediate college environment. As they develop the final perspective on their academic work, students decide on the relevance and success of their

method of selecting what is important. However, the decision is not a conscious one - they are engaged in a series of trials, reacting to the demands and constraints of their environment and estimating their success from cues given by grades, test questions, reports and various events of the academic year.

In developing the final perspective, students find not only a solution to the problem of being overloaded with work, but also a co-operative way of behaving that draws the class together in the effort to predict and fulfil the teachers' requirements. Students continue to study in a way they believe to be most efficient and economical, and regard course requirements that are unexamined as a waste of time. This emphasis on economical ways of learning extends to their judgement of teaching. "*Teaching methods that do not approach the concrete finality of a textbook seem wasteful to the students*" (Becker et al, 1961). Thus students earn themselves a reputation amongst teachers of being too pragmatic and uninterested in theory and research. Despite the general consensus of the final perspective, it is not a panacea for all students. Some may be profoundly disillusioned, being disappointed by the realisation that they must study for examinations and not the things that they think may be useful later on. Nevertheless Becker et al concluded that the final perspective was in frequent, widespread and legitimate use among the freshmen from mid-October onwards.

Becker et al (1961) use the term **academic perspective** to describe students' relationships with staff. This relationship hinges on the fact that, in most institutions, students must, for the duration of the course, keep their teachers satisfied with their progress. If a student fails to do so, the staff may prevent completion of the course or, less extremely, make his/her passage difficult and uncertain. Furthermore staff may humiliate and even degrade a student who has done poor work. Thus it is necessary to make a good impression on the staff. This may be achieved by presenting them with either the substance or appearance of learning. Because there is no simple, single method of making a good impression students must become sensitive to staff demands and modify their behaviour accordingly.

The academic perspective may be expressed in several kinds of student activities and statements, for example, generalised feelings of subordination and anxiety about tests that have been set by the teacher. If a member of staff has not made his/her wishes clear, for example, by setting a very open question or unstructured assignment, students will generally try to get more specific directions before responding. However, if a student believes that his best efforts to make a good impression will not suffice, the safest strategy is to make as little impression as possible. The academic perspective is also evident when students work less hard when there is so little staff

pressure to do so that they cannot make a good impression by working.

One consequence of the academic perspective is, from the staff point of view, a serious misdirection of student effort. Students using this perspective show no interest in learning the material they are dealing with for its own sake, instead they concentrate on doing whatever is necessary to successfully complete the course. However, the fact that the perspective is held collectively provides the individual with a set of social supports as he engages in behaviour that runs counter to staff ideals.

A later study by Becker et al (1968) used the same technique of participant observation to investigate undergraduates' perceptions of their experiences at Kansas University. Once again the authors concluded that students did what they calculated would best enable them to "*make the grade*" i.e. they developed a "*grade point average perspective*". The students' emphasis on grades arose in response to an academic environment that also emphasized grades. However, the students came to perceive a conflict between grades and learning and spoke of using strategies to get good grades at the expense of understanding the material they were expected to learn (Becker et al, 1968). Thus the process of assessment came to have the consequence of inhibiting rather than facilitating learning.

Although both of the above studies by Becker et al (1961, 1968) relied largely upon the technique of participant observation, other studies adopted a rather different approach to the problem of examining students' perceptions of the academic environment. Several researchers developed questionnaires and used survey methods as the means of obtaining their information.

One of the earliest instruments concerned with students' perceptions of college environments was the College Characteristics Index produced by Pace and Stern (1958). This contained three hundred items relating to academic, administrative and student characteristics of college environments. The CCI was subsequently modified and used in a number of research projects in the United States. Pace (1963) used one hundred and fifty items from the CCI to compose his College and University Environment Scales (CUES). This instrument was later refined (Pace, 1971), by eliminating some of the items, so that it consisted of one hundred basic items which formed five scales, consisting of twenty items each. Two new scales were added, making seven in total. These scales included items relating to scholarship, campus morale and quality of teaching. Students were asked whether each item was generally true or false for their college. Both the CCI and the CUES, and other similar instruments, have been widely used in America, not only as a means of institutional self study, but also to compare students' perceptions of different

college environments (see Feldman and Newcomb, 1969; Stern, 1970).

Although the studies described in the above reviews provide a useful insight into students' general perceptions of academic life in American colleges and universities, the results of such studies are not comparable with those carried out in European institutions which are less diverse and where the educational experience is more specialised than the American counterpart (Ramsden, 1979). In studies of European colleges and universities the main thrust of the analysis has tended to be in terms of the main subject areas being studied by students. The next section of this chapter focuses on the results of such studies.

6.3 European studies of student perceptions of higher education

A study by Gaff et al (1976) used a questionnaire developed by Geensen (1970) to analyse important aspects of the environments of four departments in a Netherlands university. It was concluded that although there were some similarities between the four departments, they provided markedly different environments.

> *"The pressure-packed, heavily prescribed nature of chemistry; the relaxed somewhat uncertain climate in law; the memory-oriented, highly structured environment in medicine; and the free-wheeling independent atmosphere of psychology."*
>
> Gaff et al (1976)

In speculating about the underlying reasons for the differences , Gaff et al refer to the work of Thompson et al (1969) who argued that natural sciences contain a highly codified body of knowledge which has been developed by means of an accepted methodology, but the social sciences, and to an even lesser extent the humanistic fields, are less codified because they have lacked accepted methodology. Thus the more exact sciences may be seen to be less student-centred by virtue of the very nature of their subject matter (Gaff et al, 1976).

An alternative explanation propounded by Gaff et al (1976) relates to the personal characteristics of people working in the different departments. For instance, Roe (1953) showed that natural scientists tended to be more "thing oriented" in comparison to social scientists who were more "people oriented". At the student level, Feldman and Newcomb (1969) have shown that students working in social science fields were more person oriented than those on natural science programs. The social science students also tended to be more flexible and individualistic in approaching their studies. Thus Gaff et al (1976) concluded that the educational environment of psychology might be more student-centred than that of chemistry because the environment reflects the personal preferences and styles of both students and teachers in that department.

One of the earliest British studies in this sphere was carried out by Miller and Parlett (1973) who used case studies to investigate undergraduate teaching and learning, in relation to one another, as they occurred within the setting of a Scottish university. They found that one group of students ("cue-seekers") spent a good deal of time with staff and believed that examination technique involved discovering what was required from the appropriate staff involved in setting the examination papers. These students went out of their way to make a good impression on staff and revised very selectively indeed. At the other extreme the "cue-deaf" had virtually no informal contact with staff and tended to start revising at the first page of their notes and go through methodically. Other differences were evident in the students' views about performance. The "cue-conscious" seemed to think that performance was the result of a mixture of hard work and luck. In contrast, the "cue-seekers" never mentioned luck - it wasn't luck, it was technique. For the "cue-deaf" it was only hard work that would show dividends. Although the analysis was based upon only thirty students, the results of this study showed that those identified as "cue-deaf" obtained significantly lower marks in the final examination than those students who were identified as "cue-seekers" or "cue-conscious".

A much larger study by Percy and Salter (1976) used data collected between 1968 and 1973 (the Rowntree Data) to reconstruct student and staff perceptions of the teaching/learning reality of higher education, and in

particular their perceptions of excellence. They suggest that students entering the various forms of higher education do so with vague, perhaps unrealistic, but genuinely high expectations of the learning experience in which they are going to be involved:

> *"They expect that they are going to be challenged, stimulated, "stretched", interested in new things, and pushed to the limits of their own intellectual and creative resources. They anticipate that the formal and informal contact with staff, and the informal interaction with friends and peers will be exciting and demanding".*
> (Percy and Salter, 1976)

However, Percy and Salter suggest that these high but vague expectations are often disappointed, "*instead of excitement they find boredom, instead of challenge they find routine*". Although Percy and Salter acknowledge that the above description is a huge generalisation, they report that a similar impression emerged from their own analysis.

The Percy and Salter study also noted the disparity between student and staff perceptions of excellence. Whilst staff associated student excellence with independence of mind and critical thinking, as an ideal to which students should aspire; such ideas were not among the constructs through which students interpreted and evaluated the process of higher education:

> *"Once embarked upon a course, what matters for students is the quality of teaching. If excellence in any field concerns them, it is excellence in teaching"*
> (Percy and Salter, 1976)

The students in the Percy and Salter study particularly identified the need for lecturers to relate to students, to be interesting and stimulating. Thus although the staff may regard themselves as intermediaries between students and subjects, students perceive the situation rather differently. They evaluate the situation totally in terms of the stimulus received from the teacher and the personal relationship established with him (Percy and Salter, 1976).

Further analysis of the Rowntree Data (see Percy and Salter, 1976) led Brennan and Percy (1977) to remark on the apparent disjunction between the aims of lecturers to promote 'critical thinking' and the relatively few opportunities students said they were given for work which would encourage such thought. This type of discrepancy, between staff and student perceptions of the academic experience, is very similar to that described by Becker et al (1968).

Later research by Percy and Ramsden (1980) examined students' perceptions of two independent study schemes in a polytechnic and a university. The results of interviews with students indicated that many valued highly the opportunity to work independently and follow their own interests.

Other research by Ramsden (1979) and Ramsden and Entwistle (1981) has extended the role of earlier research in the sphere of student perceptions, and has attempted to

identify links between course perceptions and students' approaches to studying.

The Ramsden study (1979) included the development of a questionnaire designed to examine students' course perceptions. Factor analysis of the forty-seven items identified eight dimensions, the two most important being lecturers' relationships with students and their commitment to teaching. Administration of this instrument to second-year students in six university departments yielded a total sample of two hundred and eighty-five students. The results showed that students in different departments saw the process of learning and teaching in contrasting ways.

> *"Each department appears to possess a distinctive 'atmosphere' or culture in which approaches to learning are realised".*
> (Ramsden, 1979)

In the science departments relationships between staff and students were somewhat formal and classes were perceived to be more important than individual study as a means of learning. In contrast students in the social science department felt that staff provided an informal and cooperative learning environment and much learning took place by individual study. In both arts departments individual study was felt to be of great importance as a way of learning and there was a good deal of choice in the methods and content of their studies.

The study by Ramsden (1979) used semi-structured interviews to investigate any link in students' minds between different learning strategies and different contexts of learning. The learning strategies investigated draw heavily upon the work of Marton (1975) who identified qualitatively different **levels of processing** amongst students reading academic articles. A "deep" approach concentrates on the meaning of the article and attempts to relate its contents to previous knowledge and the student's personal life. In contrast, a "surface" approach involves trying to memorise parts of the article and treating the text as a phenomenon isolated from themselves. Ramsden's analysis of his interviews with students showed that the concept of deep and surface levels of processing was also applicable to such tasks as essay writing and problem solving in science. The interviews also made it clear that a student would often show indications of different levels of processing of different tasks. This was true for both arts and science students, but the arts students were rather more likely to indicate consistency in their approaches.

The variables which appeared to exert most influence on a student's level of processing were the student's background knowledge in the field and his/her level of interest in the task, both of which according to Ramsden (1979), were much influenced by the broader contextual variables of course organisation and teachers' commitment to helping their students to learn. Thus some departments and some

lecturers seemed to facilitate a deep approach; while others used methods of teaching, or made course work demands, which forced students to adopt surface approaches.

A much larger study by Ramsden, in collaboration with Entwistle (Ramsden and Entwistle, 1981), used the same course perceptions questionnaire, together with an 'approaches to studying' inventory, to examine links between students' perceptions of their main academic departments and their reported approaches to studying. Their research identified two principal orientations towards studying, which were closely similar to Marton's categorisation of deep and surface approaches to reading. Analysis in terms of different departments showed that those rated highly on good teaching and freedom in learning had students with higher average scores on "meaning" orientation. In contrast departments that were seen to have a heavy workload and a lack of freedom in learning had students with higher average scores on "reproducing" orientation. Having established that positive attitudes and a deep approach were linked with academic progress, Ramsden and Entwistle concluded that good teaching, greater freedom in learning and avoidance of overloading were the best tactics to employ to move students away from surface towards deep approaches to learning.

In 1983 Entwistle and Ramsden published a detailed account of their research at the University of Lancaster in their book ***Understanding Student Learning***. Here the link

between learning context and approaches to studying was reiterated citing evidence not just from their analysis of interview results, but also from their analysis of data obtained using the CPQ and ASI. It was claimed that this finding had far-reaching implications for teaching and learning in HE.

However, six years later Meyer and Parsons (1989) reported on their own research which replicated part of the Entwistle and Ramsden study, using the same instruments administered to almost twelve hundred students at an institution of higher education in Cape Town. This institution was chosen because it was felt to be sufficiently different in nature, and in student body, to be of value in a comparative study which sought to explore the association between perceived contextual factors and students approaches to studying. Factor analysis confirmed the integrity of the majority of the subscales of the Course Perceptions Questionnaire and the Approaches to Studying Inventory. However, with the exception of an association between the workload subscale of the CPQ and the reproducing orientation of the ASI, there were no further associations between study orientations and the contextual variables measured by the subscales of the CPQ. Thus Meyer and Parsons (1989) concluded that the constructs represented by the CPQ do not permit exploration of the relationships between contextual factors and approaches to studying at an individual level.

In response to the findings of Meyer and Parsons, Entwistle (1989) points out that the questionnaire (CPQ) was based on concepts which were just emerging from the interviews and so rested on little previous research. Entwistle goes on to stress that their conclusion in the Lancaster study, which Meyer and Parsons quote, was based not upon the weak relationships at the individual level, but on the stronger relationships at departmental level combined with the students' own explanations in interviews of what influenced the way they studied. Taken together they found that good teaching and freedom to learn were likely to provide a context within which deep approaches could flourish, while a lack of choice, a heavy workload, and above all examinations which seemed to require the reproduction of facts pushed students towards a surface approach.

From this review of European research into student perceptions of academic courses in HE, it seems that many of the findings are broadly similar to those of the seminal work of Becker et al in the 1960s. Becker et al suggested that many aspects of academic life within universities are so imposing and complete that they are taken by students to be the summation of what the process of higher education is all about. Thus the superstructure of course work, syllabuses, assessments and examinations encourages students to adopt the strategies that they deem necessary for "*making the grade*", even though these strategies may have a deleterious effect on learning.

However, despite this apparent consensus of opinion, one should perhaps be cautious in drawing generalised conclusions. Although the major advantage of the instrumental approach to the study of college environments is that students report the environment as they see it, one must also bear in mind that several studies have shown that both students and staff view each other in terms of oversimplified stereotypes (Wilson, 1981). As Entwistle and Wilson (1977) point out, the difficulty of extrapolating statistical results into the real world of lecturers and students is an indictment of the traditional pre-occupations of educational researchers. This gap has yet to be filled by a large-scale study, incorporating interpretative and observational techniques, such as those by Becker et al in the 1960s.

6.4 Student perceptions of academic courses at sixth form level

In contrast to the situation pertaining to higher education, relatively few studies have been carried out to investigate students' perceptions of academic courses at upper secondary school level. Those that have focused on this age group have tended to rely heavily upon quantitative survey techniques.

Amongst these studies several have restricted their investigation to young people studying a particular subject or group of subjects. For example, McDill et al (1967, 1969), in a study of over twenty thousand American

students, found that achievement in mathematics was significantly related to each of the six scales of an instrument designed to measure school environment. Gardner (1974a, 1976) used a similar instrument to enable him to predict four attitudinal criteria from student perceptions of the school environment. Using a sample of over one thousand physics students in Australia it was revealed that the number of significant associations between an attitudinal outcome and a classroom environment dimension was five times that expected by chance. His results showed that students expressed greater enjoyment of physics if they were learning in classrooms perceived as highly achievement-oriented, cognitively well-organised, intellectual, stimulating and physically well-organised.

In contrast to the above studies Jones (1981), in a study of five hundred and eighty physics students in schools in New Zealand, found that academic success, as judged in terms of examination results, was not related to students' perceptions of the classroom. However, this finding runs counter to those of a large number of studies reviewed by Fraser (1986) who concluded that classroom characteristics such as order and organisation, cohesiveness and goal direction seemed to have a consistently positive influence on pupil achievement. It is possible that this discrepancy may be a consequence of using different instruments which were perhaps measuring different facets of students' perceptions.

Other studies in this area have focused specifically on young people's opinions of teacher effectiveness, but once again much of this research has involved pupils in primary or lower secondary school. Kyriacou (1983) provides a comprehensive review of such studies carried out in Britain. More recent research by Kyriacou (1986) sought to explore sixth-formers' perceptions of the effective teacher of mathematics at O level. The results of the questionnaire survey of one hundred and ninety-four students revealed that the items with the highest mean ratings related to clarity of presentation, confidence when teaching, attention to revision/examination technique and genuine interest in the subject. Other important items were concerned with teaching for understanding, patience with pupils, making lessons interesting and stimulating pupils to think for themselves. Factor analysis for principal components identified five factors which were labelled "positive rapport", "monitoring progress", "aloof discipline", "exam oriented" and "enthusiast". Kyriacou suggests that these five factors may represent the types of qualities used by pupils in making judgements about effective teaching, but concludes that a consensus amongst researchers has yet to be established.

A rather different study of students' perceptions of academic environments examined sixth-formers perspectives on independent study. Although the project was designed and lead by Stenhouse, it was reported by Hopkins and Rudduck (1984). The project included interviews with two

hundred A level students in a range of sixth form settings, including comprehensive schools, sixth form colleges, boarding schools, independent day schools, one FE college and one tertiary college. Examination of an archive of transcribed interviews provided the researchers with a view of sixth-form life, independent study and library use. Hopkins and Rudduck suggest that although the ideal of independence of mind was an ideal for many teachers and many students, it was not consistently pursued.

> *"Independence of mind implies confronting the difficulties of epistemology, for there is no case for independence unless the ideal of freedom of thought can be accepted, and this in turn implies a conviction that knowledge is constructed by thought rather than revealed by authority."*
> (Hopkins and Rudduck, 1984)

Hopkins and Rudduck suggest that for many students the knowledge deemed necessary for A level was located in the teacher's mind. The strongest evidence of this intellectual dependence on the teacher came from students' reliance on notes taken in class. With regard to the use of other sources of information the authors concluded that students' preference for the security of notes structured or dictated by the teacher could outweigh their concern for their right as students to make their own notes, and for many students the given textbook defined the limits of their adventuring outside the territory of the teacher's instruction.

At the outset of the Stenhouse study it had been anticipated that the results might provide the key to the reconceptualization of knowledge at A level (Hopkins and Rudduck, 1984). However, the authors admit that they had not realized how far removed the rhetoric of independent study was from the realities of sixth-form teaching and learning:

> *"From an early age we learn to be subservient to other people's ideas, to be in awe of the learned, and to mistake the printed word for truth. The process of learning to value oneself in relation to knowledge, to achieve confidence in one's own construction of reality, to begin, however tentatively, to own knowledge is crucially important."*
>
> (Hopkins and Rudduck, 1984)

Thus Hopkins and Rudduck concluded that the Stenhouse project was part of a quest for the emancipation of teachers and students from the instrumentality imposed by a concept of authoritative knowledge.

It is at this point that one arrives at the basis of the conceptualization of the main thrust of this study. The paucity of research into students' perceptions of A level; courses, and in particular the perceived role of the teacher, suggested that there was scope for a large-scale study in this area. With this in mind the background preparation for the construction of the "Perspectives" questionnaire began in 1985 (see Section 7.4.5; Appendix two E). The instrument was subsequently administered to one thousand five-hundred and sixty-nine students, in twenty-six institutions, who began full-time A level courses in 1986.

Since that time, Ramsden and Entwistle (see Section 6.3) have extended their research interests in student perceptions from higher education to secondary schools. Entwistle et al (1989a) developed scales designed to measure pupils' perceptions of school and teachers, and these perceptions were subsequently related to school motivation and approaches to learning amongst twelve to fifteen year olds (Entwistle et al, 1989b). Research by Ramsden et al (1989) adopted a similar theme, but here attention was focussed on students at sixth form level. The remainder of this review chapter is devoted to a discussion of this work.

In order to examine the relationship between school environment and approaches to learning at sixth form level, Ramsden et al (1989) used an inventory developed by Biggs (1987a, 1987b) to assess learning processes (the Learning Process Questionnaire -LPQ), but developed their own instrument to measure students' perceptions of the academic environment (the School Experience Questionnaire - SEQ). This instrument consisted of thirty one items derived from two sources: firstly the body of knowledge already available on classroom and school environments, and secondly, studies of academic departments in higher education. Item analysis procedures supported a model containing five dimensions of pupils' perceptions of the learning context. These dimensions were defined as follows:

"Extent to which students think the teaching they experience is supportive of their learning

Extent to which students feel they are being encouraged to perform highly in external examinations

Perceived stress in the curriculum on developing the capacity to learn independently

Extent to which goals are clearly defined and students and staff share similar aims

Extent to which students feel they are being prepared for learning in higher education" (Ramsden et al, 1989)

The SEQ and LPQ were administered to a random sample of seven hundred and forty-five students in their final year of secondary schooling in Australia. Subsequent analysis of the relations between the two sets of data gave strong support to the contention that approaches to learning are influenced by students' perceptions of sixth form environments. School environments which offered supportive teaching, coherent structure, emphasis on autonomy and moderate stress on achievement were associated with learning involving an active search for understanding, organised study methods and avoidance of superficial approaches. In contrast schools characterised by extreme emphasis on formal academic achievement, in which teaching was narrowly focused on examination success, were associated with a tendency towards minimalist, reproductive and uncompromisingly competitive approaches to learning. It was noted that the analysis also revealed significant differences among the fifty schools included in the study, for all the scales used:

"Despite the restrictions imposed by a common external examination, there is a real sense in which these sixth forms differ in the quality of learning they evoke from their pupils. It is now possible to speak with conviction about the general effect of perceived environments on the approaches learners take to academic tasks". (Ramsden et al, 1989)

In view of these findings Ramsden et al concluded that further research in this area could have fruitful implications for school effectiveness.

The results of this recent study, together with those of earlier research, in relation to the present study, are discussed in Section 11.3.

Chapter seven

Research design and methodology

7.1 A restatement of the objectives of the study

1) To review the historical context of A level education.
2) To investigate variables overtly influencing students' choice of subjects for study at A level.
3) To evaluate students' subsequent satisfaction with their chosen courses.
4) To examine students' perceptions of the academic experience provided at A level.

7.2 Introduction

The above aims suggest that this project falls within the category of "descriptive research" as described by Nisbett and Entwistle (1970). This may be distinguished from "experimental research" in that the former is concerned with describing the conditions that exist, while the latter involves controlling and modifying the conditions in order to observe what happens (Lovell and Lawson, 1970).

Despite its title, "descriptive research" does not consist solely of routine fact gathering. It also, as in this study, seeks to determine the degree to which underlying variables exist in given situations and under given conditions, and estimate their relative importance. Furthermore, descriptive research can be used to identify which underlying variables are related in some way, although it may be that no assumptions can be made that the

relationship is one of cause and effect (Lovell and Lawson, 1970). This broad investigation is of a developmental nature, looking at the variables of institution type, gender, subject specialization and general academic ability.

Developmental studies are concerned with changes which occur as a function of time. There are two main approaches to the study of development: longitudinal and cross-sectional. The longitudinal approach was adopted for this research project as it is the only way of recording changes in student academic profiles. In addition, this study seeks to investigate the typical pattern of development of student perspectives on A level courses, and must therefore restrict itself to the original sample. Finally, this method was feasible within the time available and the problems usually associated with such an approach did not appear to be insurmountable.

Despite the advantages of the longitudinal method, long-term contact with the same group of subjects poses many problems. The inevitable magnitude of such a project makes considerable demands in terms of time and money. Lovell and Lawson (1970) outline a further problem which may arise from the selection of subjects in terms of social class. They suggest that students from the middle socio-economic group are more willing to participate, and maintain their interest, in longitudinal studies than students from the lowest socio-economic group. Thus it may be difficult to maintain a representative sample. However, parents in the middle-class group may be more mobile than parents in the lowest group, so may be more likely to leave the area. The loss of subjects from the sample poses many difficulties which must be allowed for in the design of the project.

Another problem inherent in longitudinal studies is that the behaviour of the subjects may be affected by their participation in the research. In consequence their pattern of development may be atypical (Lovell and Lawson, 1970). This must be borne in mind when interpreting the results of longitudinal research.

In essence the investigation consisted of following a cohort of young people through a two-year period of A level education, monitoring their satisfaction with their A level work and the development of their academic perspectives. At the outset the study was confined to students who fulfilled the following criteria:

a) they were full-time students.

b) they were on two-year A level courses.

c) they were less than eighteen years of age at the beginning of the study.

The sample included students from the full range of institutions providing A level education, namely sixth forms in schools of various types, sixth form colleges, tertiary colleges and colleges of further education (See Chapters 2 and 3). The sample needed to be sufficiently large to be representative of the A-level student population within such institutions in the chosen geographical area. In addition, the sample needed to be large enough to allow for the decline in numbers that inevitably accompanies a longitudinal study of this nature.

The necessity for a large sample, together with the wide geographical distribution of the institutions, imposed severe restrictions in terms of the amount of time that could be spent with students. This, coupled with a need for objectivity, suggested that the main investigation should be conducted using a battery of questionnaires which would be administered by staff within the institutions, or self-administered where necessary. The development of these instruments is described in Section 7.4.

During the first half term of the academic year the whole cohort was asked to complete the initial set of instruments (Appendix Two), consisting of a questionnaire developed to

gather background information about the students, and two others concerned with factors affecting subject choice and perspectives on A level courses.

Later in the first academic year the cohort completed a second set of instruments, consisting of the same questionnaire on perspectives, but also including a questionnaire designed to evaluate students' satisfaction with their chosen subjects, and identify any changes that had been made.

The questionnaire on perspectives, together with an instrument gathering students projections of their performance in the final examinations, were completed on two further occasions, during the second year of the course. The approximate time schedule for completion of the instruments is shown in Table 7.1. It should be noted that approximately fifteen teaching weeks elapsed between each session, the timing being planned to avoid coinciding with examination periods. The raw data is available from the author on request.

		WEEK NUMBER
YEAR ONE	Term one	1 2 3 4 **5 6 7 8** 9 10 11 12 13 14
	Term two	1 2 3 4 5 6 7 8 9 **10 11 12 13**
	Term three	1 2 3 4 5 6 7 8 9 10 11
YEAR TWO	Term one	1 2 3 4 **5 6 7 8** 9 10 11 12 13 14
	Term two	1 2 3 4 5 6 7 8 9 **10 11 12 13**
	Term three	1 2 3 4 5

Table 7.1 Approximate time schedule for completion of the instruments (the questionnaires were administered during the weeks shown in **bold** print).

7.3 Sampling procedures

7.3.1 Institutions

The limitations imposed by travelling and time suggested that, in the first instance, the study should be confined within the geographical boundary of the West Midlands. Ideally the institutions used should be chosen at random from each stratified population of institutions providing A-level education in this defined area (Lewis, 1967). In practice stratified random sampling was impossible to achieve because the study became limited to those education authorities and institutions willing to cooperate. Such acceptance of available samples is referred to by Lewis as incidental sampling.

An introductory letter was sent to the Director of Education of each of the seven local education authorities within the West Midlands, outlining the proposed project and requesting permission to contact headteachers and principals of institutions providing A level courses. The response was disappointing in that affirmative replies were received from only three authorities. Of the remainder, three authorities failed to reply, whilst the fourth felt unable to authorize participation of teachers at that time, possibly because of widespread industrial action.

Of the three participating local education authorities, two were somewhat smaller than the third in terms of the number of institutions providing A level education. For those with relatively few such institutions a whole-group

sampling policy was attempted, with a view to encompassing all institutions, and so avoiding the problem of bias. This was impracticable for the largest authority where a random sampling procedure, with replacement, was felt to be more appropriate. Here institutions were selected at random, using a table of random numbers, from within each category available i.e. schools, sixth form colleges and colleges of further education.

A letter was written to the headmaster or principal of each institution, giving an outline of the investigation and requesting their assistance. The response was generally encouraging, with most institutions agreeing to participate. The exception being a number of colleges of further education which failed to reply.

Efforts thus far yielded a total sample of twenty-three institutions, in four distinct categories, within three local authorities. The distribution is shown in Table 7.2.

	Local Education Authority			
Institution type	A	B	C	Total
Schools	7	3	4	14
Sixth form colleges	1	1	3	5
Tertiary colleges	1	0	0	1
Colleges of F.E.	2	0	1	3
Total	11	4	8	**23**

Table 7.2 Types of institutions participating within each Local Education Authority

In view of the desirability of including more than one of each type of institution, an approach was made to a second tertiary college situated outside the West Midlands area. For the sake of completeness two local boarding schools were also contacted. All agreed to cooperate with the investigation, giving a final total of twenty-six institutions of four distinct types.

7.3.2 Students

Within each institution a whole-group sampling procedure was adopted, encompassing all students within the remit of the design of the investigation. The only exception being one college with large numbers of first year A level students (n>300). Here a large sample was selected, giving due consideration to gender, academic ability and subject specialisation.

The questionnaires were distributed during a tutorial period via sixth form tutors in the schools and personal tutors in most of the colleges. Each tutor was issued with printed information to be read out to the students, explaining the purpose of the investigation and an assurance of total confidentiality (Appendices Two A and B). In most institutions the questionnaires were completed at the time of issue and were then collected by tutors and placed in an envelope. Where this procedure was not convenient, for example in some of the colleges, the questionnaires were distributed via subject teachers and completed by students in their spare time, being returned

either to the subject teacher or the college office. Whilst it might be argued that such inconsistencies could introduce bias, it must be acknowledged that such variation was unavoidable if all types of institutions were to be sampled by one investigator on a part-time project. In a large study of this kind, where it is not feasible for a single researcher to administer the instruments to all students, it must also be accepted that it is impossible to control the exact nature of the presentation, which in turn may affect the reception of the instruments by students, and so the "quality" of their responses.

Some of the anomalies outlined above are perhaps reflected in the percentage response by students. In most of the schools the response rate was very close to 100%. For the colleges, of all types, the response rate was more varied and frequently difficult to assess accurately, partly because of fluctuating numbers of students early in the academic year, but also because several of the colleges had no record of what proportion of their first year A-level cohort had completed the fifth year of secondary education in June 1986. Nevertheless the response was generally good, with between 60-100% of the target group, as estimated by college principals or vice-principals, completing the questionnaires. One college produced a very disappointing response rate, presumably reflecting administrative difficulties or a lack of enthusiasm amongst the staff for this type of research. Evidence for the latter comes from the fact that there was considerable

variation between the tutor groups within the college, thus indicating the importance of positive tutor attitudes.

In general terms the instruments seemed to be well received by the students, since no complaints were voiced and none of the scripts were spoiled.

The procedure detailed above produced a total sample of 1569 first-year A level students. Section 7.5 describes the participating students in terms of the data gained from the Background Information questionnaire (Appendix Two C).

7.4 The development of the instruments

7.4.1 Overview

A number of different research methodologies were employed in the development of a comprehensive battery of instruments. The whole process of development is best described in a series of phases:

Phase I involved an extensive programme of reading of previous research relevant to subject choice and perspectives on academic courses. The information so gained was augmented and developed in the context of A level education through informal discussions with students and their teachers.

Phase II began with the design of a semi-structured interview schedule to investigate students' reasons for choosing their A level subjects, their initial expectations of A level work, their approach to study, and their overall evaluation of A level education. This instrument (Appendix

One) was used to interview three, four or five students, either individually or in pairs, from each of the four main types of institutions taking part in the survey. Each interview lasted approximately 25-45 minutes, being recorded on cassette and subsequently transcribed for detailed scrutiny. The original recordings and transcripts are available from the author for inspection.

In Phase III, the knowledge gained from Phases I and II was used to construct items for three questionnaires: one to gather general background information, the second to investigate factors affecting subject choice, the third to examine students' perspectives on A-level work. These instruments and their development are described in Sections 7.4.3, 7.4.4 and 7.4.5.

7.4.2 The pilot study

The battery of instruments was administered, by the researcher, to approximately twenty students in their third term of A level study in each of the four main types of institution taking part in the survey, providing a pilot sample of eighty-eight students distributed as follows: school (24), sixth form college (21), tertiary college (21), college of further education (22).

Three weeks later a sub-sample of nineteen students, who were readily available at the workplace of the author, was asked to complete the same battery of instruments, under the same conditions, to permit test-retest analysis where

appropriate. The results of the pilot study are outlined, in terms of each separate instrument, in the remainder of this chapter.

7.4.3 The "Background Information" questionnaire (Appendix Two C)

The pilot questionnaire gathered information of a largely factual nature. Students were required to indicate their age in years and months, their sex, the name of the institution they were currently attending, the name of their last secondary school, and their level of success in external examinations taken in the fifth year at school. The latter information was used to provide an index of academic ability based upon the number of O levels (or equivalent) obtained.

Students were also asked to indicate the number of A levels they were studying, which subjects, if a course in General Studies was being followed, and if they were studying for any extra O levels.

The final section asked students to indicate whether they hoped to go on to higher education after A levels, and if so, what course they would like to follow. Similarly students were asked if they had a particular career in mind, and if so, what career this was.

Scrutiny of pilot scripts revealed a few superficial problems which resulted in the following alterations being made to this instrument:

a) The recording of students' ages posed some difficulties, so the format was changed to give four boxes for a four digit response: two boxes for the age in years and two boxes for the number of months.

b) The item requesting the name of the last secondary school attended was excluded because it produced such a wealth of different responses, including a few from overseas, that it proved impracticable to code.

c) An extra space was added for students to indicate "other subjects" they had studied in the fourth and fifth year at school. The original pilot questionnaire did not allow a sufficient number of spaces to accommodate the needs of some students.

From the outset it had been acknowledged that it would be impossible to code for students' specific aspirations beyond A level. Nevertheless it was felt that such open items might prove useful at a later date as a source of more detailed information to augment the responses of students who indicated that they hoped to go on to higher education, or had a specific career in mind. On this basis these two items were retained.

Analysis of the data revealed a range of ages, from 16.01-19.10 months, with most of the older students attending either the college of further education or the

tertiary college. This suggested that an upper age limit should be imposed for the main study in order to preserve the validity of comparisons between institutions.

The pilot sample consisted of thirty-seven boys and fifty-one girls, distributed fairly evenly between the four different types of institution.

The students had obtained between one and twelve O level passes (or equivalent) and had no difficulty completing the table which required them to indicate what grade they obtained for each subject. As for all other parts of this instrument, the honesty of the students was assumed. Obviously it would have been administratively impossible to check all the examination results within the time available for this project.

They were studying between one and four subjects at A level, the majority (78.4%) studying three. The vast number of different subjects available confirmed the view that the main study, like the pilot study, should be confined to a limited number of separately coded subjects.

For the pilot study, eleven subjects were coded separately, the uptake of each being shown in Table 7.3. The remainder were coded collectively as "other A level subjects".

Scrutiny of the "other subjects" revealed that sociology was by far the most frequently cited subject in this category. For this reason it was decided to incorporate sociology as a coded subject in the main study.

A level subject	Student uptake	
	Number	Percentage
English literature	15	17
mathematics	24	27.3
physics	12	13.6
chemistry	22	25
biology	17	19.3
French	4	4.5
German	4	4.5
geography	8	9.1
history	12	13.6
economics	12	13.6
art	1	1.1
Other subjects	40	45.5

Table 7.3 Uptake of subjects at A level (Pilot Study)

The factual nature of this instrument rendered test-retest analysis unnecessary.

7.4.4 The "Subject Choice" questionnaire (Appendix Two D)

This questionnaire required students to complete one table for each A level subject they were studying. Each table included fifteen possible reasons for choosing a subject, and students were asked to indicate the degree of influence of each variable on a three point scale: a lot, a little, not at all. The variables investigated were either mentioned in the interviews with students or had been investigated in previous studies of factors affecting subject choice (see Section 5.5). It cannot be assumed that this list of variables is exhaustive.

Interrogation of the pilot cohort and perusal of the scripts suggested that students had no difficulty completing this instrument.

The size of the pilot sample yielded insufficient numbers of students studying each subject to make separate analyses worthwhile for each subject. Table 7.4 shows the distribution of student responses for the subject they indicated in the first table of the questionnaire. These may thus be regarded as generalised responses to each of the variables investigated.

Perusal of these results suggests that the most important factors in subject choice at A level are the interest value of the subjects and the level of success at O-level. The results of the main study permit more detailed and accurate analysis, both in general terms and for specific subjects.

	Number of students responding			
Variables investigated	No response	A lot	A little	Not at all
Advice of careers teacher	2	5	28	53
Advice of subject teacher	1	18	35	34
Advice of parent(s)	1	12	38	37
Advice of older student	1	7	21	59
Advice of friend (peer)	1	4	19	64
Needed for course in H.E.	1	24	23	40
Needed for career	1	32	30	25
Useful for general life	2	26	40	20
Would be a challenge	2	17	46	23
Would be interesting	1	51	34	2
Goes with other subjects	1	40	32	15
Would be well taught	1	24	32	31
Would be easier	1	8	17	62
Successful at O-level	1	50	22	15
Friend doing same subject	3	1	9	75

Table 7.4 Variables affecting subject choice at A level (N=88) N.B. one student studied only General Studies so did not respond at all.

The size of the pilot sub-groups yielded insufficient students of each subject to make test-retest analysis worthwhile for each individual subject. Maths was the only subject where the number of cases exceeded ten. The results of the test-retest, for correlated data, for this subject are shown in Table 7.5. As none of the values of t are greater than the P=5% value (2.23), the mean of the differences does not, for any variable, differ significantly from zero. Thus the null hypothesis must be accepted i.e. there is no real difference between the mean scores for each variable.

Variable number	Mean	Standard deviation	Standard error	t value
1	2.2727	0.647	0.195	
1(R)	2.3636	0.674	0.203	-0.56
2	2.0000	0.894	0.270	
2(R)	2.1818	0.751	0.226	-1.49
3	2.2727	0.467	0.141	
3(R)	2.2727	0.786	0.237	0.00
4	2.9091	0.302	0.091	
4(R)	2.6363	0.505	0.152	1.94
5	2.8182	0.405	0.122	
5(R)	2.9091	0.302	0.091	-1.00
6	2.2727	0.786	0.237	
6(R)	2.0000	0.894	0.270	1.94
7	1.9091	0.831	0.251	
7(R)	1.6364	0.505	0.152	1.40
8	2.0000	0.775	0.234	
8(R)	2.0000	0.632	0.191	0.00
9	1.9091	0.539	0.163	
9(R)	1.9091	0.539	0.163	0.00
10	1.7273	0.467	0.141	
10(R)	1.9091	0.539	0.163	-1.00
11	1.6364	0.809	0.244	
11(R)	1.9091	0.701	0.211	-1.40
12	2.0000	0.775	0.234	
12(R)	2.1818	0.751	0.226	-1.00
13	2.9091	0.302	0.091	
13(R)	3.0000	0.000	0.000	-1.00
14	1.4545	0.522	0.157	
14(R)	1.5455	0.522	0.157	-1.00
15	2.9091	0.302	0.091	
15(R)	2.9091	0.302	0.091	0.00

Table 7.5 t-values for test-retest for mathematics. (N=11, degrees of freedom=10)

Hence, despite the small number of cases in several subjects, it seems reasonable to conclude that the instrument is sufficiently reliable to justify its use in the main study without alteration.

The final part of the Subject Choice questionnaire required students to indicate whether they felt that their choice of A levels was in any way restricted, and if so, to indicate which restrictions applied. This list of possible restrictions was compiled from statements recorded in the initial interviews and informal discussions with students.

Test-retest analysis was not possible for this last part of the questionnaire due to the fact that only a small proportion of the pilot sample responded to this section.

7.4.5 The "Student Perspectives" questionnaire (Appendix Two E)

The academic perspectives of sixth form students have received little attention in Britain, or indeed elsewhere. Where research has been carried out in this area it has focused almost exclusively on students in Higher Education. Much of this research has been American (see Section 6.2), for example, Pace (1963, 1971) and Stern (1970). Such studies have relied almost exclusively on questionnaire techniques for the collection of data. Similar techniques have been adopted more recently for research in Britain (see Section 6.3), for example, Percy and Salter (1976), Ramsden (1979), and Ramsden and Entwistle (1981).

A rather different group of studies has used the techniques of participant observation, discussion and unstructured or semi-structured interviews to examine students' academic perspectives. Amongst the earliest studies of this kind were those carried out by Becker et al (1961, 1968). In 1973, Miller and Parlett used case studies of Scottish university students to investigate undergraduate teaching and learning, in relation to one another.

The results of the above studies, and others pertinent to this field, are discussed in detail in Chapter Six.

The limitations of time dictated the method to be adopted for this study, namely the self-report questionnaire. This seemed appropriate in view of the stated aim of examining the development of students' perspectives over the two years of their A level course.

The form of the questionnaire was shaped largely by the need for simplicity arising from the decision to use the self-report technique. Individual items were derived from the preliminary interviews and the review of previous research in this area. An original list of eighty-six items was reduced to fifty-eight items by discarding those which were considered, by the author and two independent

educationalists, to be similar to other items. All fifty-eight items were included in the pilot study.

Students were required to respond to each item on a five point scale ranging from "strongly agree" to "strongly disagree".

The test-retest procedure was used to assess the reliability of the instrument (N=19, degrees of freedom=18). The following items yielded values of t which were greater than the P = 5% value (2.09):

A level lessons consist mostly of making notes t= -2.38
(significance = 0.029)

It is more important to learn how to think than to achieve good grades t= 2.28
(significance = 0.035)

Most of my work is orientated towards getting good grades in the examinations t= 2.72
(significance = 0.014)

Discussion with students suggested that the main reason for inconsistency for the first and third items possibly arose from the difficulty in generalising between different subject areas. For the second item the inconsistency may be explained by a belief that the ability to think is closely related to examination achievement. Whatever the underlying reasons it was felt undesirable to include these items in the instrument to be used in the main study.

Visual inspection of the remaining fifty-five items suggested that they could be sorted into several dimensions, which although not necessarily discrete, might provide a useful basis for discussion. In the main study the relationships between the items were explored using the techniques of factor analysis. The remainder of this section is devoted to a detailed discussion of the factor structure.

As an initial step in simplifying the interpretation of the results Pearson correlation coefficients were calculated for the data obtained on the first occasion (Appendix seven). This analysis revealed significant relationships between several of the items which comprised the original instrument. In order to further investigate these relationships the data for the first occasion was subjected to Factor Analysis, for principal components, with Varimax rotation, with no predetermined limit on the number of factors to be extracted. As Cattell (1978) points out, there is virtually always an indefinite number of smaller and smaller factors needing to be extracted up to at least the full number of variables present. In order to extract a sensible number of factors i.e. not to miss any factor of more than trivial size, a number of procedures may be adopted. By applying the Kaiser-Guttman rule of stopping when the last latent root falls below one, this principal components analysis identified sixteen factors. However, Cattell (1978) argues that this rule is wrong in principle and erratic in practice, recommending

instead the application of a scree test. The plot of the scree test of the first sixteen factors extracted is shown in Figure 7.1. This plot line shows a break, at approximately the eighth factor, between the "chute" of the larger factors and the much more gently sloping straight line running thereafter. On this basis the subsequent factor analysis was restricted to a maximum of eight factors. Items with factor loadings below plus or minus 0.3 were rejected, this being common practice in the interpretation of main factors (Child, 1970).

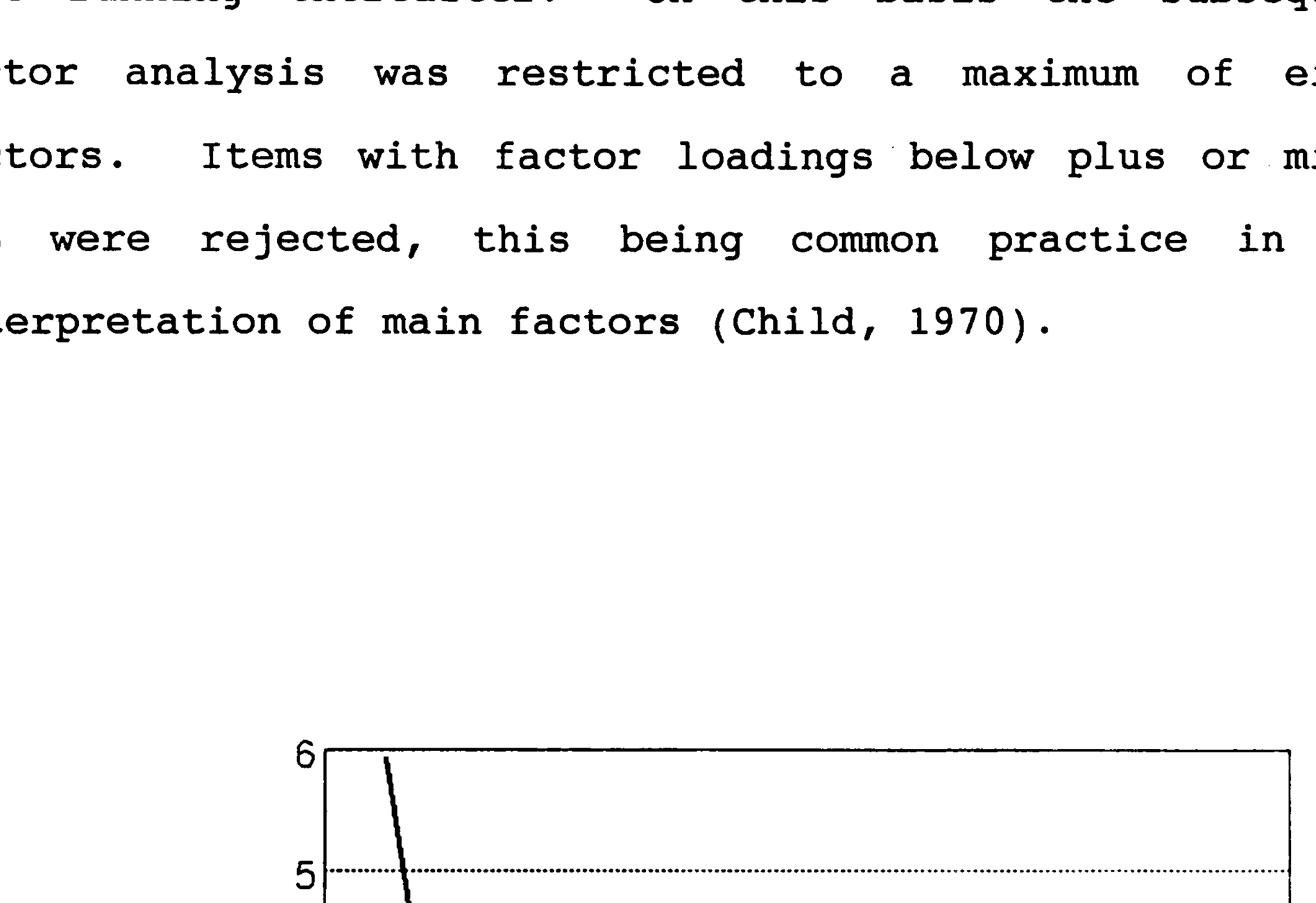


Figure 7.1 Scree plot of the first sixteen factors extracted for the "Perspectives" questionnaire

Factor	**1**				**2**				**discarded**				**3**			
Occasion	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Items																
01	-.33	-.32	-.34													
03					.30	.42	.44	.39								
04					.34	.34		.34								
05							.37	.34	-.31							
08	.53	.54	.61	.60												
09	.51	.52	.58	.59												
10	.47	.43	.44	.43							.33					
11					.40	.34	.44	.41								
12	.31	.32									.33	.36				
18	.34	.40	.34	.33												
20						.31	.37	.37					.35	-.44	-.32	-.34
21								.43					.30	-.48	-.34	-.34
24			.31	.30									-.33	.34	.31	.35
25	.40	.35	.37	.36						-.37					.32	
27	.40	.34	.38	.38				.31								
28	.52	.48	.51	.49												
30	.39	.35	.35	.41												
31	.42	.37	.42	.41												
32	.44	.43	.48	.47												
33					.40	.33	.33									
34	.38	.46	.42	.47												
35	.35	.44	.35	.36												
36	-.45	-.51	-.52	-.46							.31					
37	.55	.56	.61	.53												
38	-.30	.38	.42	.35												
39	.45	.55	.52	.53												
43	-.35	-.37	-.43	-.39												
45	.41	.47	.39	.36												
46			.30		.33							.33				
47													-.32	.45	.33	.39
49	.34	.31	.42	.45												
51		-.36	-.42	-.38	.33			.32			.35					
53	.36		.44	.35												
54		-.31			.41	.35	.34	.32								
55	.38	.36	.44	.43												

Table 7.6 Factor loadings for each item on each occasion

The following items were discounted from all further discussion because they failed to load significantly on any of the factors identified on the first occasion: 06, 07, 15, 19, 22, 23, 26, 29, 40, 41, 42, 48, 50 and 52. Items which loaded significantly on more than one factor were also eliminated from all further discussion. Thus items 02, 13, 14, 16, 17 and 44 were discarded.

In order to check the consistency of the factors the Factor analysis was repeated using the data obtained for these items on occasions two, three and four. From the results shown in Table 7.6 it is apparent that, with the exception of one factor which was, in consequence, subsequently discarded, the factors identified were remarkably consistent over all four occasions. Although the consistency of the factors should ideally be checked by replicating the study in different situations (Bauernfeind, 1968), it was felt that in view of the large size of the student cohort in this study, this was not essential at this stage.

Consideration of the factor loadings shown in Table 7.6, in descending order of magnitude, suggests that the factors identified thus far could be labelled as follows:

Factor 1 Students' feelings about A level work and A level teachers

01 I feel that I was well-prepared for A level work
08 I find A level work boring
09 I find it difficult to identify with the subjects I am studying
10 I have difficulty keeping up with the work set
12 I feel I could probably do better than I am doing at the moment

18 I am not sufficiently mature to plan out all my work for myself
25 It is a complete waste of time for teachers to deal with material that is not on the syllabus
27 Teachers rarely have time to discuss work with students outside lessons
28 Most teachers are unable to understand why students find some topics difficult
30 Most teachers would never admit that they were wrong
31 Most teachers are too formal in their approach to A level students
32 Most teachers are not interested in discussing work with students outside lesson time
34 A level lessons provide little opportunity for discussion
35 A level work consists largely of facts to be memorized
36 A level courses often deal with interesting issues
37 A level courses are so packed with facts that there is little time to think about the work you are doing
38 A level courses provide little opportunity for original research
39 A level work is largely irrelevant to everyday life
43 A level education encourages students to think for themselves
45 A level students have to rely too much on their own initiative
49 A level education does not prepare students for their future careers
53 Striving for good grades interferes with real learning
55 If I failed the final examinations I would feel that the whole course had been a waste of time

Factor 2 Students' attitudes towards competition and the importance of grades

03 I learn more in my own time than I do during lessons
04 I would like more time to discuss my work with teachers on an individual basis
11 I feel it is important to be ahead of other people in the group
33 A level work is very competitive
46 A level students place too much emphasis on grades
51 A level work teaches students to think critically
54 The thought of failure or not getting good enough grades makes me work harder

Factor 3 Students' perceptions of the role of teachers

20 Teachers should only provide the basic principle of a subject, students should find out the details for themselves
21 Teachers should not present facts, instead they should act as guides to students' independent study
24 Teachers should provide all the information a students needs to know for the examination
47 A level education is the key to future success

7.5 The participating students

The student sample is described in terms of the responses given on the "Background Information" questionnaire (Appendix Two C). The cohort consisted of 1569 A level students in schools (44.7%) sixth form colleges (31.7%), tertiary colleges (16.7%) and colleges of further education (6.9%). Their distribution between individual institutions is given in Appendix Three A.

The sexes were fairly evenly represented, 50.9% being male and 47.7% female, with the remaining 1.4% failing to indicate their gender.

Ages ranged from 15.06 to 17.11 years. The upper age limit was set by eliminating the scripts of all students aged 18.00 and over.

When estimated in terms of number of O level passes or equivalent, the spread of academic ability was considerable, ranging from 0-13 examination successes (see Appendix Three B). For ease of analysis the whole cohort was divided into three similar sized groups based upon the number of O levels obtained. Thus the lowest ability group had 0-5 passes (30.1% of sample), the middle ability group had 6-7 passes (27.2% of sample) and the highest ability group had 8-13 passes (42.7% of sample). As the cumulative frequency distribution did not permit the formation of equal sized groups, it was considered that this method of delineation was acceptable.

From Table 7.7 it is apparent that the overwhelming majority of students (77.6%) were studying three A level subjects. The next largest category of students (15.4%) studied just two subjects. In addition to their A level subjects 42.0% of the students were following a course in General Studies and 55.7% were studying for extra O levels.

	Students	
Number of A levels studied	N	%
1	44	2.8
2	242	15.4
3	1218	77.6
4	65	4.1
	1569	100

Table 7.7 Number of A level subjects studied by students

The relationship between academic ability and number of A levels studied is shown in Table 7.8. Chi-square analysis showed that the relationship was highly significant ($p < 0.0001$), with the higher ability students studying a larger number of subjects at A level.

Number of A levels	Level of academic ability Low N (%)	Medium N (%)	High N (%)
1	43 (9.1)	1 (0.2)	0 (0.0)
2	197 (41.4)	32 (7.3)	13 (1.8)
3	230 (48.8)	385 (90.6)	603 (90.1)
4	3 (0.6)	8 (1.8)	54 (8.1)
	473	426	670

Table 7.8 Relationship between number of A level subjects studied and level of academic ability
(Chi-square = 522.44 with 6 df Sig = 0.0000)

For the purposes of this study the number of subjects to be considered was limited to twelve (see Section 7.4.3). The distribution of the students between these subjects is shown in Table 7.9.

A level subjects	Students N	Students %
English literature	520	33.1
Mathematics	604	38.5
Physics	399	25.4
Chemistry	391	24.9
Biology	274	17.5
French	169	10.8
German	63	4.0
Geography	260	16.6
History	315	20.1
Economics	379	24.2
Sociology	163	10.4
Art	147	9.4
Other subjects	645	41.1

Table 7.9 The distribution of the students between the twelve subjects investigated

The students were divided into three "specialisation groups" on the basis of the nature of the subjects they studied (see Appendix Four). The classification of the various subjects studied was derived from Dainton (1968). Those who studied two or more subjects from the "Sciences" group (and no other subjects) were counted as **Science Specialists**, as were students who studied one or two science subjects plus one subject from the "Unclassified" category (but no other subjects). Similarly, those who studied two or more subjects from the "Arts" group (and no other subjects) were counted as **Arts Specialists**, as were students who studied one or two arts subjects plus one subject from the "Unclassified" category. Students

studying any other combination of subjects were regarded as **Unspecialized.** This strict categorisation of students yielded three groups of very unequal sizes (Table 7.10), the "Unspecialized" group being by far the largest:

Specialisation	Students N	%
Arts	210	(13.4)
Sciences	419	(26.7)
Unspecialized	939	(59.9)
	1568	(100.0)

Table 7.10 The distribution of the students in terms of subject specialisation

Chapter eight

Variables affecting subject choice

8.1 Introduction

The results reported in this chapter were obtained during Phase One of the research project using Questionnaire 2 - Subject Choice at A-level (Appendix two D). From the outset it must be stressed that the data reflect students' perceptions of the importance of the variables investigated, and not necessarily the actual degree of influence of these variables. It should also be pointed out that although the list of variables is comprehensive it may not be exhaustive.

8.2 The subjects investigated

From Table 8.1 it can be seen that the variable most frequently indicated as strongly affecting choice of English literature was the interest value of the subject; other important variables being previous examination success in the subject and the belief that it forms an appropriate combination with other subjects being studied.

For mathematics the variable most frequently seen as highly influential was previous success in the subject. Other important variables being its compatibility with other subjects and its necessity for particular careers (Table 8.1). In contrast to most other subjects, only 41.4% of students reported being strongly influenced by interest value.

Subjects investigated

Variables	Eng. lit	Maths	Physics	Chemistry	Biology	French	German	Geography	History	Economics	Sociology	Art
	n=515	n=599	n=398	n=390	n=272	n=168	n=63	n=259	n=315	n=370	n=165	n=136
Careers teacher	33(06.4)	063(10.5)	041(10.3)	049(12.7)	015(05.6)	007(04.2)	005(07.9)	015(05.8)	018(05.7)	036(09.8)	010(06.1)	010(07.5)
Subject teacher	087(17.0)	112(18.9)	054(13.7)	067(17.4)	037(13.8)	029(17.3)	014(22.2)	027(10.5)	044(14.1)	030(08.2)	006(03.7)	036(26.5)
Parents	105(20.4)	152(25.4)	070(17.6)	077(19.8)	044(16.3)	030(17.9)	010(15.9)	032(12.4)	044(14.0)	073(19.7)	020(12.3)	031(23.0)
Older student	025(04.9)	039(06.6)	028(07.1)	031(08.0)	010(03.7)	007(04.2)	004(06.3)	022(08.6)	018(05.7)	032(08.7)	010(06.2)	008(06.0)
Friends (peers)	018(03.5)	018(03.0)	016(04.1)	023(06.0)	005(01.9)	005(03.0)	002(03.2)	007(02.7)	007(02.3)	009(02.4)	007(04.3)	006(04.4)
Needed for HE	130(25.3)	219(36.9)	186(47.0)	200(51.5)	132(49.3)	048(28.7)	023(36.5)	025(09.8)	050(15.9)	052(14.1)	019(11.9)	040(29.9)
Needed for career	178(34.8)	295(49.7)	216(54.5)	208(53.6)	145(53.7)	064(38.1)	029(46.0)	029(11.3)	045(14.3)	103(28.1)	040(24.5)	056(41.2)
Useful in general	196(38.2)	218(36.7)	092(23.3)	061(15.8)	059(21.9)	066(39.5)	018(28.6)	048(18.5)	044(14.1)	149(40.3)	079(48.2)	031(23.3)
Would be a challenge	170(33.0)	171(28.7)	130(32.8)	125(32.1)	082(30.4)	055(32.9)	030(48.4)	079(30.5)	094(29.9)	112(30.5)	067(40.9)	059(43.7)
Would be interesting	341(66.2)	248(41.4)	213(53.7)	212(54.4)	200(73.5)	115(68.9)	043(68.3)	190(73.4)	220(69.8)	191(51.6)	119(72.1)	108(79.4)
Goes - other subjects	274(53.2)	335(55.9)	259(65.2)	244(62.6)	129(47.8)	078(46.7)	039(61.9)	100(38.8)	171(54.5)	145(39.4)	077(47.2)	031(23.0)
Would be well taught	183(35.7)	153(25.7)	092(23.2)	102(26.2)	089(32.8)	066(39.8)	037(59.7)	106(41.6)	099(31.9)	075(20.3)	030(18.5)	045(33.8)
Would be easier	048(09.4)	043(07.2)	016(04.1)	023(06.0)	016(06.0)	016(09.6)	004(06.3)	025(09.7)	023(07.3)	028(07.6)	015(09.4)	020(15.3)
Successful at O level	282(55.4)	371(62.1)	212(53.5)	222(57.4)	145(53.9)	106(63.5)	035(56.5)	152(58.9)	181(57.8)	036(10.1)	008(05.2)	074(54.8)
Friend doing subject	015(02.9)	016(02.7)	010(02.5)	007(01.8)	007(02.6)	004(02.4)	000(00.0)	011(04.3)	014(04.6)	013(03.5)	004(02.5)	003(02.3)

Table 8.1 Number and percentage of students within each subject indicating "A lot" of influence for each variable investigated (n (%))
N.B. a small number of students did not complete all items, hence summation of student numbers
(from Tables 8.1, 8.2 and 8.3) may not lead to the total number of students studying that subject.

Subjects investigated

Variables	Eng. lit	Maths	Physics	Chemistry	Biology	French	German	Geography	History	Economics	Sociology	Art
Careers teacher	139(27.1)	198(33.1)	135(34.0)	144(37.3)	088(33.0)	043(25.6)	015(23.8)	057(22.0)	071(22.5)	122(33.1)	046(28.2)	044(32.8)
Subjceet teacher	231(45.0)	243(41.0)	162(41.0)	154(40.1)	119(44.4)	088(52.4)	029(46.0)	137(53.3)	152(48.6)	086(23.5)	027(16.8)	060(44.1)
Parents	219(42.6)	273(45.7)	193(48.5)	176(45.2)	128(47.4)	089(53.0)	029(46.0)	144(44.2)	139(44.1)	155(41.9)	064(39.3)	054(40.0)
Older student	099(19.3)	118(19.8)	061(15.4)	081(20.9)	058(21.7)	022(13.1)	007(11.1)	054(21.0)	054(17.1)	081(22.0)	037(22.8)	031(23.1)
Friends (peers)	085(16.6)	119(20.1)	066(16.7)	057(14.8)	042(16.0)	022(13.3)	009(14.3)	047(18.2)	058(18.7)	074(20.1)	027(16.7)	029(21.5)
Needed for HE	162(31.6)	165(27.8)	111(28.0)	102(26.3)	072(26.9)	045(26.9)	019(30.2)	056(21.9)	094(29.9)	117(31.7)	043(27.0)	031(23.1)
Needed for career	184(35.9)	196(33.0)	117(29.5)	106(27.3)	068(25.2)	051(30.4)	020(31.7)	093(36.2)	106(33.7)	105(40.9)	061(37.4)	042(30.9)
Useful in general	239(46.6)	255(42.9)	204(51.5)	192(49.9)	137(50.9)	078(46.7)	035(55.6)	153(59.1)	180(57.7)	187(50.5)	069(42.1)	061(45.9)
Would be a challenge	227(44.1)	254(42.6)	177(44.7)	160(41.1)	112(41.5)	079(47.3)	018(29.0)	120(46.3)	162(51.6)	166(45.2)	079(48.2)	051(37.8)
Would be interesting	146(28.3)	264(44.1)	157(39.5)	142(36.4)	067(24.6)	046(27.5)	017(27.0)	058(22.4)	088(27.9)	146(39.5)	043(26.1)	024(17.6)
Goes - other subjects	175(34.0)	205(34.2)	112(28.2)	115(29.5)	103(38.1)	057(34.1)	019(30.2)	119(46.1)	102(32.5)	107(46.2)	062(38.0)	065(48.1)
Would be well taught	200(39.0)	221(37.1)	162(40.8)	139(35.7)	109(40.2)	057(34.3)	013(21.0)	090(35.3)	126(40.6)	159(43.1)	071(43.8)	048(36.1)
Would be easier	098(19.2)	097(16.3)	051(12.9)	064(16.6)	054(20.2)	036(21.6)	009(14.3)	071(27.6)	074(23.6)	090(24.4)	045(28.1)	025(19.1)
Successful at O level	184(36.1)	187(31.3)	150(37.9)	131(33.9)	101(37.5)	051(30.5)	022(35.5)	080(31.0)	088(28.1)	032(09.0)	012(07.7)	041(30.4)
Friend doing subject	046(09.0)	065(10.9)	044(11.2)	031(08.2)	023(08.6)	016(09.6)	002(03.2)	022(08.6)	039(12.7)	045(12.3)	022(13.7)	016(12.0)

Table 8.2 Number and percentage of students within each subject indicating "A little" for each variable investigated (n (%))
N.B. a small number of students did not complete all items, hence summation of student numbers
(from Tables 8.1, 8.2 and 8.3) may not lead to the total number of students studying that subject.

Subjects investigated

Variables	Eng. lit	Maths	Physics	Chemistry	Biology	French	German	Geography	History	Economics	Sociology	Art
Careers teacher	341(66.5)	337(56.4)	221(55.7)	193(50.0)	164(61.4)	118(70.2)	043(68.3)	187(72.2)	226(71.7)	211(57.2)	107(65.6)	080(59.7)
Subjceet teacher	195(38.0)	238(40.1)	179(45.3)	163(42.4)	112(41.8)	051(30.4)	020(31.7)	093(36.2)	117(37.4)	250(68.3)	128(79.5)	040(29.4)
Parents	190(37.0)	173(28.9)	135(33.9)	136(35.0)	098(36.3)	049(29.2)	024(38.1)	112(43.3)	132(41.9)	142(38.4)	079(48.5)	050(37.0)
Older student	388(75.8)	438(73.6)	307(77.5)	275(71.1)	199(74.5)	139(82.7)	052(82.5)	181(70.4)	243(77.1)	256(69.4)	115(71.0)	095(70.9)
Friends (peers)	410(79.9)	455(76.9)	313(79.2)	304(79.2)	216(82.1)	139(83.7)	052(82.5)	204(79.1)	245(79.0)	286(77.5)	128(79.0)	100(74.1)
Needed for HE	221(43.1)	210(35.4)	099(25.0)	086(22.2)	064(23.9)	074(44.3)	021(33.3)	175(68.4)	170(54.1)	200(54.2)	097(61.0)	063(47.0)
Needed for career	150(29.3)	103(17.3)	063(15.9)	074(19.1)	057(21.1)	053(31.5)	014(22.2)	135(52.5)	164(52.1)	114(31.1)	062(38.0)	038(27.9)
Useful in general	078(15.2)	121(20.4)	100(25.3)	132(34.3)	073(27.1)	023(13.8)	010(15.9)	058(22.4)	088(28.2)	034(09.2)	016(09.8)	041(30.8)
Would be a challenge	118(22.9)	171(28.7)	089(22.5)	104(26.7)	076(28.1)	033(19.8)	014(22.6)	060(23.2)	058(18.5)	089(24.3)	018(11.0)	025(18.5)
Would be interesting	028(05.4)	087(14.5)	027(06.8)	036(09.2)	005(01.8)	006(03.6)	003(04.8)	011(04.2)	007(02.2)	033(08.9)	003(01.8)	004(02.9)
Goes - other subjects	066(12.8)	059(09.8)	026(06.5)	031(07.9)	038(14.1)	032(19.2)	005(07.9)	039(15.1)	041(13.1)	053(14.4)	024(14.7)	039(28.9)
Would be well taught	130(25.3)	222(37.2)	143(36.0)	148(38.0)	073(26.9)	043(25.9)	012(19.4)	059(23.1)	085(27.4)	135(36.6)	061(37.7)	040(30.1)
Would be easier	365(71.4)	454(76.4)	327(83.0)	298(77.4)	197(73.8)	115(68.9)	050(79.4)	161(62.6)	216(69.0)	251(68.0)	100(62.5)	086(65.6)
Successful at O level	043(08.4)	039(06.5)	034(08.6)	034(08.8)	023(08.6)	010(06.0)	005(08.1)	026(10.1)	044(14.1)	289(81.0)	135(87.1)	020(14.8)
Friend doing subject	448(88.0)	513(86.4)	340(86.3)	342(90.0)	236(88.7)	146(88.0)	061(96.8)	223(87.1)	254(82.7)	309(84.2)	134(83.7)	114(85.7)

Table 8.3 Number and percentage of students within each subject indicating "Not at all" for each variable investigated (n (%))
N.B. a small number of students did not complete all items, hence summation of student numbers
(from Tables 8.1, 8.2 and 8.3) may not lead to the total number of students studying that subject.

For physics, the most influential variable appeared to be its compatibility with other subjects. Also important were career value, interest value and previous examination success in the subject (Table 8.1).

For chemistry students, the variable most frequently perceived as highly influential on subject choice was its compatibility with other subjects (Table 8.1). Other variables with a lot of influence, for many students, were previous success in the subject, its interest value, and its usefulness for career and H.E. purposes.

In biology the single most important variable perceived to affect choice was the interest value of the subject, with 73.5% of the students indicating that this variable had "a lot" of influence (Table 8.1). Other important variables were previous success in the subject and its necessity for a particular career and higher education. Many students also felt that they were strongly influenced by the belief that biology was compatible with the other subjects they were studying.

For French, the most important variable strongly influencing choice was, once again, the interest value of the subject, with previous success also being seen as very influential (Table 8.1). Compatibility with other subjects was perceived as important by over 46% of the students. In contrast to mathematics and the sciences, a relatively large proportion of those studying French felt they were

not influenced at all by a need for the subject for H.E. or career purposes (Table 8.3).

As in the case of French, a large proportion (68.3%) of those studying German felt that their choice was strongly influenced by the interest value of the subject (Table 8.1). Other variables perceived as important by the majority of students were the compatibility of German with other subjects, the belief that it would be well taught, previous success in the subject and its necessity for a particular career.

In geography, the interest value of the subject was by far the most frequently cited, highly influential variable (Table 8.1). The only other variables felt to have had a lot of influence by the majority of students were previous success in the subject and, less importantly for many students, a belief that the subject would be well taught.

In history, the interest value of the subject was seen as being highly influential by a large proportion of the students, with previous success in the subject and its compatibility with other subjects also being important (Table 8.1). More than half the students felt that the career value of history, or its necessity for H.E., were unimportant as variables affecting choice (Table 8.3).

In economics only one variable had exerted a lot of influence over more than half the students, this being the

perceived interest value of the subject (Table 8.1). However, more than 40% of the students had been strongly influenced by a belief that the subject would be useful for life in general.

In sociology, perceived interest value was by far the most influential variable (Table 8.1). Other variables believed to have had a lot of influence by the majority of students were the usefulness of the subject for life in general and its compatibility with other subjects.

For art, the interest value of the subject was perceived as being by far the most important variable, with almost 80% of the students indicating that this had a lot of influence. The majority of students also felt that previous success in the subject and its career value had also strongly affected their choice (Table 8.1).

8.3 Analysis in terms of academic ability

The distribution of academic ability, as judged in terms of success in examinations at 16+ (see Section 7.5), for each subject investigated, is shown in Table 8.4.

The English literature students were fairly evenly distributed between the three ability categories (Table 8.4).

Subject (n)	Low	Medium	High
English literature (515)	30.5%	29.7%	39.8%
Mathematics(599)	18.4%	29.7%	51.9%
Physics (398)	15.6%	28.6%	55.8%
Chemistry (390)	15.1%	23.6%	61.3%
Biology (272)	19.5%	19.1%	61.4%
French (168)	11.3%	21.4%	67.3%
German(63)	15.9%	19.0%	65.1%
Geography (259)	25.9%	32.4%	41.7%
History (315)	25.4%	29.8%	44.8%
Economics (370)	30.8%	30.0%	39.2%
Sociology (165)	38.2%	35.8%	26.1%
Art (136)	51.5%	24.3%	24.3%

Table 8.4 The distribution of students in terms of academic ability

Statistical analysis, using Chi-square, in terms of academic ability revealed that although parents were not generally perceived as a major influence on choice, students of lower academic ability were more likely to feel that they had been influenced by their parents' advice (Table 8.5). Similarly these students were more likely to feel that they needed the subject for a particular career (Table 8.6).

Degree of influence	Level of academic ability: Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	43	(27.6)	31	(20.3)	31	(15.1)
A little	62	(39.7)	58	(37.9)	99	(48.3)
Not at all	51	(32.7)	64	(41.8)	75	(36.6)

Table 8.5 Distribution of student responses by level of academic ability for the variable "Advice of parent(s)" (Chi-square = 11.123 with 4 df Sig = 0.0252)
- English literature students

Degree of influence	Level of academic ability: Low N	(%)	Medium N	(%)	High N	(%)
A lot	71	(45.5)	45	(29.6)	62	(30.4)
A little	51	(32.7)	57	(37.5)	76	(37.3)
Not at all	34	(21.8)	50	(32.9)	66	(32.4)

Table 8.6 Distribution of student responses by level of academic ability for the variable "Subject needed for particular career"
(Chi-square = 12.447 with 4 df Sig = 0.0143)
- English literature students

The majority of students studying mathematics were in the highest ability group (Table 8.4). Chi-square analysis revealed several significant differences in terms of level of academic ability: students of lower ability were generally less likely to feel that they had been influenced by their subject teacher (Table 8.7) or the notion of compatibility of the subject with other subjects (Table 8.10). Students of medium ability appeared to be more influenced than others by the advice of older students (Table 8.8) and the usefulness of the subject for life in general (Table 8.9).

Degree of influence	Level of academic ability: Low N	(%)	Medium N	(%)	High N	(%)
A lot	22	(20.6)	29	(16.5)	61	(19.7)
A little	29	(27.1)	83	(47.2)	131	(42.3)
Not at all	56	(52.3)	64	(36.4)	118	(38.1)

Table 8.7 Distribution of student responses by level of academic ability for the variable "Advice of subject teacher"
(Chi-square = 12.518 with 4 df Sig = 0.0139)
- Mathematics students

Degree of influence	Level of academic ability: Low N	Low (%)	Medium N	Medium (%)	High N	High (%)
A lot	6	(5.5)	19	(10.9)	14	(4.5)
A little	21	(19.1)	40	(22.9)	57	(18.4)
Not at all	83	(75.5)	116	(66.3)	239	(77.1)

Table 8.8 Distribution of student responses by level of academic ability for the variable "Advice of older student who had done subject" (Chi-square = 10.113 with 4 df Sig = 0.0386) - Mathematics students

Degree of influence	Level of academic ability: Low N	Low (%)	Medium N	Medium (%)	High N	High (%)
A lot	36	(32.7)	83	(47.2)	99	(32.1)
A little	45	(40.9)	71	(40.3)	139	(45.1)
Not at all	29	(26.4)	22	(12.5)	70	(22.7)

Table 8.9 Distribution of student responses by level of academic ability for the variable "Subject useful for life in general" (Chi-square = 16.320 with 4 df Sig = 0.0026) - Mathematics students

Degree of influence	Level of academic ability: Low N	Low (%)	Medium N	Medium (%)	High N	High (%)
A lot	44	(40.0)	111	(62.4)	180	(57.9)
A little	51	(46.4)	55	(30.9)	99	(31.8)
Not at all	15	(13.6)	12	(6.7)	32	(10.3)

Table 8.10 Distribution of student responses by level of academic ability for the variable "Thought subject would go well with other subjects" (Chi-square = 15.757 with 4 df Sig = 0.0034) - Mathematics students

As in the case of mathematics, the majority of physics students were in the higher ability category (Table 8.4). Chi-square analysis in terms of academic ability failed to reveal any significant differences, for any of the variables investigated, at the five per cent level.

As for physics and mathematics, chemistry had attracted a high proportion of more able students (Table 8.4). Statistical analysis, using Chi-square, revealed a significant difference at the five per cent level for the higher education variable (Table 8.11), with students of higher academic ability placing more emphasis on this variable when choosing chemistry at A level.

Degree of influence	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	24	(40.7)	37	(41.6)	139	(57.9)
A little	18	(30.5)	28	(31.5)	56	(23.3)
Not at all	17	(28.8)	24	(27.0)	45	(18.8)

Table 8.11 Distribution of student responses by level of academic ability for the variable "Subject needed for particular course at university/polytechnic"
(Chi-square = 10.427 with 4 df Sig = 0.0338)
- Chemistry students

In terms of academic ability, higher ability students were once again in the majority in biology. However, in contrast to the situations pertaining for physics and chemistry, it seems that biology attracted a slightly larger proportion of lower ability students (Table 8.4). Chi-square analysis revealed only one significant difference in terms of academic ability and variables affecting choice of biology, with the high ability students being more strongly influenced by the H.E. variable (Table 8.12). This variable was also more important to the lower ability group than those in the middle category.

Degree of influence	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	22	(41.5)	19	(38.8)	90	(54.9)
A little	15	(28.3)	10	(20.4)	46	(28.0)
Not at all	16	(30.2)	20	(40.8)	28	(17.1)

Table 8.12 Distribution of student responses by level of academic ability for the variable "Subject needed for particular course at university/polytechnic"
(Chi-square = 13.554 with 4 df Sig = 0.0089)
- Biology students

Chi-square analysis failed to reveal any significant differences, at the five per cent level, between students of French, for any variable, in terms of academic ability. This was possibly because of the relatively small number of students taking the subject. However, it is interesting to note that French attracted a large proportion of high ability students (Table 8.4), over two thirds of whom were girls.

Similarly German attracted a large proportion of high ability students (Table 8.4). Once again Chi-square analysis failed to reveal any significant differences, at the five per cent level, for any of the variables investigated, in terms of academic ability.

Although the majority of geography students were in the high ability group, this subject attracted more low and medium ability students than the other traditional subjects (Table 8.4). Statistical analysis, using Chi-square, revealed differences, significant at the five per cent level, for two of the variables investigated. Students of

lower ability were, in general, less likely to feel that they had been influenced to some extent by their subject teacher (Table 8.13), but were more likely to feel that they had been strongly influenced by their parents (Table 8.14).

Degree of influence	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	11	(16.7)	10	(12.0)	6	(5.6)
A little	25	(37.9)	43	(51.8)	69	(63.9)
Not at all	30	(45.5)	30	(36.1)	33	(30.6)

Table 8.13 Distribution of student responses by level of academic ability for the variable "Advice of subject teacher" (Chi-square = 12.855 with 4 df Sig = 0.0120) - Geography students

Degree of influence	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	15	(22.4)	4	(4.8)	13	(12.0)
A little	26	(38.8)	40	(48.2)	48	(44.4)
Not at all	26	(38.3)	39	(47.0)	47	(43.5)

Table 8.14 Distribution of student responses by level of academic ability for the variable "Advice of parent(s)" (Chi-square = 10.560 with 4 df Sig = 0.0320) - Geography students

In terms of academic ability, history, like geography, attracted a smaller proportion of superior ability students than the other traditional subjects (Table 8.4). Statistical analysis, using Chi-square, revealed that higher ability students were more likely to feel that they had been influenced by the perceived relative easiness of the subject (Table 8.15). Interestingly history is the only subject, of the twelve investigated, where a

significant difference was found for this variable in terms of academic ability.

Degree of influence	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	1	(1.3)	5	(5.3)	17	(12.1)
A little	21	(26.9)	24	(25.5)	29	(20.6)
Not at all	56	(71.8)	65	(69.1)	95	(67.4)

Table 8.15 Distribution of student responses by level of academic ability for the variable "Thought subject would be easier than some others" (Chi-square = 9.890 with 4 df Sig = 0.0423) - History students

The distribution of students in terms of academic ability shows that economics attracted a much larger proportion of less able students than most of the traditional subjects (Table 8.4). Chi-square analysis revealed no significant differences at the five per cent level, for any of the variables, in terms of academic ability.

In terms of academic ability, low ability students formed the largest proportion of the sociology cohort (Table 8.4). Chi-square analysis by academic ability failed to reveal any significant differences, at the five per cent level, for the variables being investigated.

In terms of academic ability, less able students also formed the majority of the art cohort (Table 8.4). Statistical analysis, using Chi-square, revealed only one significant difference in terms of academic ability; the

lower ability group being more strongly influenced than the others by the career value of the subject (Table 8.16).

Degree of influence	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
A lot	35	(50.0)	8	(24.2)	13	(39.4)
A little	21	(30.0)	14	(42.4)	7	(21.2)
Not at all	14	(20.0)	11	(33.3)	13	(39.4)

Table 8.16 Distribution of student responses by level of academic ability for the variable "Subject needed for particular career" (Chi-square = 9.560 with 4 df Sig = 0.0485) - Art students

8.4 Analysis in terms of type of institution attended

The distribution of students, in terms of type of institution attended, is shown in Table 8.17.

Subjects (n)	Schools	SFC	TC	FE
English lit (515)	46.2%	33.0%	14.8%	6.0%
Mathematics (599)	43.1%	35.2%	17.7%	4.1%
Physics (398)	44.5%	34.4%	17.3%	3.8%
Chemistry (390)	48.2%	35.4%	12.8%	3.6%
Biology (272)	53.3%	30.9%	12.5%	3.3%
French (168)	53.6%	34.5%	10.7%	1.2%
German (63)	54.0%	23.8%	22.0%	0.0%
Geography (259)	55.6%	26.6%	17.0%	0.8%
History (315)	42.2%	36.2%	19.0%	2.5%
Economics (370)	54.9%	28.4%	11.1%	5.7%
Sociology (165)	27.3%	26.1%	29.7%	17.0%
Art (136)	59.6%	19.9%	7.4%	13.2%

Table 8.17 The distribution of students between different types of institutions

The small percentages of students studying some subjects in the tertiary and further education colleges can be partly accounted for by the smaller samples from these two types of institution and also the fact that they cater for

a substantial number of older students who are beyond the scope of this project.

Chi-square analysis of the results for English literature, in terms of institution type, suggest that students in schools, sixth form colleges and colleges of F.E. were more likely than their counterparts in tertiary colleges to have been strongly influenced by a belief in the usefulness of English literature for life in general (Table 8.18). As might be expected, the students in schools were more influenced than those in the post-16 institutions by the variable "Thought the subject would be well taught" (Table 8.19). However, approximately 40% of students in all types of institution felt that this variable had influenced their choice a little, perhaps suggesting a general feeling of confidence in the teaching of this subject.

Degree of influence	Type of institution attended: School		S.F.C		T.C.		F.E.	
	N	(%)	N	(%)	N	(%)	N	(%)
A lot	97	(40.8)	61	(36.5)	19	(25.0)	19	(59.4)
A little	111	(46.6)	75	(44.9)	41	(53.9)	12	(37.5)
Not at all	30	(12.6)	31	(18.6)	16	(21.2)	1	(3.1)

Table 8.18 Distribution of student responses by type of institution attended for the variable "Subject useful for life in general"
(Chi-square = 16.380 with 6 df Sig = 0.0119)
- English literature students
N.B. 1 out of 12 (8.3%) of the valid cells had an expected cell frequency less than 5.0

Degree of influence	Type of institution attended							
	School		S.F.C		T.C.		F.E.	
	N	(%)	N	(%)	N	(%)	N	(%)
A lot	103	(43.3)	53	(31.5)	19	(25.0)	8	(25.8)
A little	91	(38.2)	65	(38.7)	31	(40.8)	13	(41.9)
Not at all	44	(18.5)	50	(29.8)	26	(34.2)	10	(32.3)

Table 8.19 Distribution of student responses by type of institution attended for the variable "Thought subject would be well taught"
(Chi-square = 16.755 with 6 df Sig = 0.0102)
- English literature students

Analysis of the results for mathematics, by type of institution, again showed that students in schools were more strongly influenced by the belief that the subject would be well taught (Table 8.20). In contrast to the situation pertaining for English literature, more than 37% of mathematics students in all types of post-16 institutions felt that they were not influenced at all by this variable.

Degree of influence	Type of institution attended							
	School		S.F.C		T.C.		F.E.	
	N	(%)	N	(%)	N	(%)	N	(%)
A lot	77	(30.0)	41	(19.6)	24	(22.6)	11	(45.8)
A little	109	(42.4)	75	(35.9)	33	(31.1)	4	(16.7)
Not at all	71	(27.6)	93	(44.5)	49	(46.2)	9	(37.5)

Table 8.20 Distribution of student responses by type of institution attended for the variable "Thought subject would be well taught"
(Chi-square = 26.396 with 6 df Sig = 0.0002)
- Mathematics students

Statistical analysis of the results for physics showed a significant difference at the one per cent level for the variable "Thought subject would be well taught", with the school students once again being more influenced by this

belief (Table 8.21). More than 43% of the students in sixth form and tertiary colleges felt that they had not been influenced at all by this variable, perhaps reflecting widespread uncertainty amongst these students about the quality of teaching they would receive in this subject.

Degree of influence	Type of institution attended: School N	(%)	S.F.C N	(%)	T.C. N	(%)	F.E. N	(%)
A lot	51	(28.8)	27	(19.7)	12	(17.4)	2	(14.3)
A little	82	(46.3)	46	(33.6)	27	(39.1)	7	(50.0)
Not at all	44	(24.9)	64	(46.7)	30	(43.5)	5	(35.7)

Table 8.21 Distribution of student responses by type of institution attended for the variable "Thought subject would be well taught" (Chi-square = 19.565 with 6 df Sig = 0.0033) - Physics students
N.B. 1 out of 12 (8.3%) of the cells had an expected cell frequency less than 5.0

Only one significant difference emerged from the statistical analysis of the results for chemistry, by institution type, with tertiary college and F.E. students apparently placing more emphasis than others on the usefulness of chemistry for life in general (Table 8.22).

Degree of influence	Type of institution attended: School N	(%)	S.F.C N	(%)	T.C. N	(%)	F.E. N	(%)
A lot	28	(15.1)	19	(13.9)	12	(24.0)	2	(15.4)
A little	90	(48.6)	63	(46.0)	31	(62.0)	8	(61.5)
Not at all	67	(36.2)	55	(40.1)	7	(14.0)	3	(23.1)

Table 8.22 Distribution of student responses by type of institution attended for the variable "Subject useful for life in general" (Chi-square = 12.848 with 6 df Sig = 0.0455) - Chemistry students
N.B. 2 out of 12 (16.7%) of the cells had an expected cell frequency less than 5.0

Chi-square analysis of the results for biology revealed no significant differences, at the five per cent level, in terms of institution type.

The modern language students were very unevenly distributed between the different types of institutions, approximately 54% being in schools. The colleges of further education yielded no students of German and very few studying French. Chi-square analysis failed to reveal any significant differences, at the five per cent level, for any of the variables investigated, in terms of type of institution attended.

The distribution of the geography students was also very uneven, with over fifty-five per cent being in schools. Chi-square analysis failed to find any significant differences, at the five per cent level, in terms of institution type, for any of the variables investigated.

Chi-square analysis of the results for history revealed no significant differences, at the five per cent level, for any of the variables investigated, in terms of type of institution attended.

Statistical analysis of the distribution of the results for economics, in terms of the variables being investigated, revealed just one significant difference ($p<0.05$). It seems that although few students perceived the advice of a careers teacher as being very influential

on their choice of economics, students in tertiary colleges were apparently more influenced by this variable than their counterparts in other institutions (Table 8.23).

Degree of influence	Type of institution attended: School N	(%)	S.F.C N	(%)	T.C. N	(%)	F.E. N	(%)
A lot	13	(6.4)	14	(13.3)	9	(22.0)	0	(0.0)
A little	70	(34.5)	32	(30.5)	13	(31.7)	7	(35.0)
Not at all	120	(59.1)	59	(56.2)	19	(46.3)	13	(65.0)

Table 8.23 Distribution of student responses by type of institution attended for the variable "Advice of careers teacher" (Chi-square = 13.505 with 6 df Sig = 0.0357) - Economics students
N.B. 2 out of 12 (16.7%) of the cells had an expected cell frequency less than 0.5

The sociology students were more evenly distributed between the different types of institutions than students of any other subject. This can probably be explained by the fact that many of the schools did not offer this subject at A-level. No significant differences were found, at the five per cent level, for any of the variables, in terms of type of institution attended.

For art, school students once again formed the majority of the sample. Chi-square analysis by type of institution failed to reveal any significant differences, at the five per cent level, for any of the variables investigated.

8.5 Analysis in terms of gender

The distribution of the students, in terms of gender, between the various subjects investigated, is shown in Table 8.24.

Subject (n)	Male	Female
English lit (509)	28.5%	71.5%
Mathematics (591)	70.1%	29.9%
Physics (392)	78.6%	21.4%
Chemistry (387)	60.7%	39.3%
Biology (268)	43.3%	56.7%
French (165)	32.7%	67.3%
German (63)	31.7%	68.3%
Geography (256)	62.5%	37.5%
History (312)	40.1%	59.9%
Economics (360)	63.6%	36.4%
Sociology (163)	16.0%	84.0%
Art (135)	45.9%	54.1%

Table 8.24 The distribution of students in terms of gender

Over seventy-one per cent of the English literature students were female. Chi-square analysis by gender revealed several interesting differences: girls placing more emphasis on the career value and interest value of the subject and its compatibility with other subjects, while boys were more influenced by the belief that the subject would be well taught (Tables 8.25 - 8.28). Although few students felt that their choice had been affected by having a friend doing the same subject, boys were significantly more likely to admit to this influence (Table 8.29).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	45	(31.3)	129	(35.6)
A little	45	(31.3)	137	(37.8)
Not at all	54	(37.5)	96	(26.5)

Table 8.25 Distribution of student responses by gender for the variable "Subject needed for particular career" (Chi-square = 6.012 with 2 df Sig = 0.0495) - English literature students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	90	(62.1)	249	(68.4)
A little	39	(26.9)	103	(28.3)
Not at all	16	(11.0)	12	(3.3)

Table 8.26 Distribution of student responses by gender for the variable "Thought subject would be interesting" (Chi-square = 11.984 with 2 df Sig = 0.0025) - English literature students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	63	(43.4)	208	(57.1)
A little	59	(40.7)	113	(31.0)
Not at all	23	(15.9)	43	(11.8)

Table 8.27 Distribution of student responses by gender for the variable "Thought subject would go well with other subjects" (Chi-square = 7.819 with 2 df Sig = 0.0201) - English literature students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	64	(44.4)	117	(32.2)
A little	48	(33.3)	149	(41.0)
Not at all	32	(22.2)	97	(26.7)

Table 8.28 Distribution of student responses by gender for the variable "Thought subject would be well taught" (Chi-square = 6.707 with 2 df Sig = 0.0350) - English literature students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	11	(7.7)	4	(1.1)
A little	15	(10.6)	29	(8.0)
Not at all	116	(81.7)	329	(90.9)

Table 8.29 Distribution of student responses by gender for the variable "Friend doing same subject"
(Chi-square = 16.854 with 2 df Sig = 0.0002)
- English literature students
N.B. 1 out of 6 cells (16.7%) had an expected cell frequency less than 5.0

Only 29.9% of the mathematics students were girls. The statistical analyses, using Chi-square, by gender revealed two highly significant differences: boys being more influenced by the career value of mathematics (Table 8.30) and its suitability in combination with other subjects (Table 8.31). As for many other subjects, although the variable itself was frequently perceived to be lacking in influence, boys were more likely than girls to be affected by having a friend doing the same subject (Table 8.32).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	219	(53.3)	70	(40.0)
A little	132	(32.1)	62	(35.4)
Not at all	60	(14.6)	43	(24.6)

Table 8.30 Distribution of student responses by gender for the variable "Subject needed for particular career"
(Chi-square = 11.744 with 2 df Sig = 0.0028)
- Mathematics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	246	(59.4)	82	(46.3)
A little	135	(32.6)	69	(39.0)
Not at all	33	(8.0)	26	(14.7)

Table 8.31 Distribution of student responses by gender for the variable "Thought subject would go well with other subjects" (Chi-square = 10.895 with 2 df Sig = 0.0043) - Mathematics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	14	(3.4)	2	(1.1)
A little	51	(12.4)	12	(6.9)
Not at all	364	(84.2)	161	(92.0)

Table 8.32 Distribution of student responses by gender for the variable "Friend doing same subject" (Chi-square = 6.688 with 2 df Sig = 0.0353) - Mathematics students
N.B. 1 out of 6 (16.7%) of the valid cells had an expected cell frequency less than 5.0

Girls also formed the minority of the physics cohort, representing just 21.4% of the group. Chi-square analysis in terms of gender suggests that girls were more likely to feel that their parents had some influence on their choice of physics (Table 8.33), while boys placed significantly more emphasis than girls on their previous level of success (Table 8.34) and having a friend doing the same subject (Table 8.35).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	55	(17.9)	14	(16.7)
A little	140	(45.5)	50	(59.5)
Not at all	113	(36.7)	20	(23.8)

Table 8.33 Distribution of student responses by gender for the variable "Advice of parent(s)" (Chi-square = 6.975 with 2 df Sig = 0.0504) - Physics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	175	(57.0)	33	(39.3)
A little	110	(35.8)	39	(46.4)
Not at all	22	(7.2)	12	(14.3)

Table 8.34 Distribution of student responses by gender for the variable "Successful in this subject at O level/C.S.E." (Chi-square = 9.680 with 2 df Sig = 0.0079) - Physics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	10	(3.3)	0	(0.0)
A little	39	(12.7)	4	(4.9)
Not at all	258	(84.0)	78	(95.1)

Table 8.35 Distribution of student responses by gender for the variable "Friend doing same subject" (Chi-square = 7.177 with 2 df Sig = 0.0276) - Physics students
N.B. 1 out of 6 (16.7%) of the valid cells had an expected cell frequency less than 5.0

As in the cases of mathematics and physics, girls were once again in the minority in chemistry, representing 39.5% of the cohort. Chi-square analysis suggests that boys were more influenced than girls by the advice of older students (Table 8.36). Girls were more utilitarian, placing more emphasis on the career value of the subject (Table 8.37). Boys were more strongly influenced than girls by the belief that the subject would provide a challenge (Table 8.38)

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	26	(11.2)	5	(3.3)
A little	53	(22.7)	27	(17.9)
Not at all	154	(66.1)	119	(78.8)

Table 8.36 Distribution of student responses by gender for the variable "Advice of older student" (Chi-square = 10.114 with 2 df Sig = 0.0064) - Chemistry students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	114	(48.7)	92	(60.9)
A little	66	(28.2)	39	(25.8)
Not at all	54	(23.1)	20	(13.2)

Table 8.37 Distribution of student responses by gender for the variable "Subject needed for particular career" (Chi-square = 7.363 with 2 df Sig = 0.0252) - Chemistry students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	85	(36.3)	40	(26.3)
A little	81	(34.6)	78	(51.3)
Not at all	68	(29.1)	34	(22.4)

Table 8.38 Distribution of student responses by gender for the variable "Thought subject would be a challenge" (Chi-square = 10.651 with 2 df Sig = 0.0049) - Chemistry students

In biology the girls formed a slight majority, comprising 56.7% of the cohort. Chi-square analysis in terms of gender revealed just one significant difference; boys being more influenced than girls by the advice of older students (Table 8.39).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	6	(5.3)	4	(2.7)
A little	36	(31.6)	22	(14.9)
Not at all	72	(63.2)	122	(82.4)

Table 8.39 Distribution of student responses by gender for the variable "Advice of older student who had done subject" (Chi-square = 12.464 with 2 df Sig = 0.0020) - Biology students

The majority (67.3 %) of the students taking French were female (Table 8.24). Chi-square analysis failed to reveal any significant differences, at the five per cent level, for any variable, in terms of gender.

As might be expected, the majority (68.3%) of German students were also girls (Table 8.24). Chi-square analysis suggests that boys placed more emphasis than girls on the usefulness of the subject for life in general (Table 8.40). No other significant differences were found.

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	10	(50.0)	8	(18.6)
A little	6	(30.0)	29	(67.4)
Not at all	4	(20.0)	6	(14.0)

Table 8.40 Distribution of student responses by gender for the variable "Subject useful for life in general" (Chi-square = 8.468 with 2 df Sig = 0.0145) - German students
N.B. 1 out of 6 (16.7%) of the valid cells had an expected cell frequency less than 5.0

As in the case of mathematics and the physical sciences, the majority (62.5%) of geography students were boys. Chi-square analysis suggests that girls generally placed more emphasis than boys on the perceived usefulness of geography for life in general (Table 8.41) whilst boys, once again, were more likely to be influenced by having a friend doing the same subject (Table 8.42).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	31	(19.4)	16	(16.7)
A little	85	(53.1)	66	(68.8)
Not at all	44	(27.5)	14	(14.6)

Table 8.41 Distribution of student responses by gender for the variable "Subject useful for life in general" (Chi-square = 7.142 with 2 df Sig = 0.0281) - Geography students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	11	(7.0)	0	(0.0)
A little	16	(10.2)	6	(6.3)
Not at all	130	(82.8)	90	(93.8)

Table 8.42 Distribution of student responses by gender for the variable "Friend doing same subject" (Chi-square = 8.611 with 2 df Sig = 0.0135) - Geography students
N.B. 1 out of 6 (16.7%) of the valid cells have expected cell frequency less than 5.0

The majority (59.9%) of the history students were girls. Statistical analysis, using Chi-square, in terms of gender revealed two significant differences: boys apparently being more influenced by the advice of older students (Table 8.43) and, once again, by having a friend doing the same subject (Table 8.44).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	7	(5.6)	11	(5.9)
A little	30	(24.2)	24	(12.8)
Not at all	87	(70.2)	152	(81.3)

Table 8.43 Distribution of student responses by gender for the variable "Advice of older student who had done subject" (Chi-square = 6.748 with 2 df Sig = 0.0342) - History students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	9	(7.4)	5	(2.8)
A little	19	(15.6)	18	(9.9)
Not at all	94	(77.0)	158	(87.3)

Table 8.44 Distribution of student responses by gender for the variable "Friend doing same subject" (Chi-square = 6.169 with 2 df Sig = 0.0457) - History students

The majority (63.6%) of economics students were boys. Chi-square analysis in terms of gender revealed several interesting differences for the variables investigated. In general, girls seem to have been more strongly influenced than boys by the subject teacher (Table 8.45), the notion that economics would provide a challenge (Table 8.47) and would form a suitable combination with their other subjects (Table 8.48). In contrast, boys apparently placed more emphasis than girls on the career value of the subject (Table 8.46) and, once again, were more influenced by having a friend doing the same subject (Table 8.49).

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	14	(6.1)	16	(12.3)
A little	60	(26.2)	24	(18.5)
Not at all	155	(67.7)	90	(69.2)

Table 8.45 Distribution of student responses by gender for the variable "Advice of subject teacher" (Chi-square = 5.959 with 2 df Sig = 0.0508) - Economics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	68	(30.0)	31	(23.8)
A little	103	(45.4)	43	(33.1)
Not at all	56	(24.7)	56	(43.1)

Table 8.46 Distribution of student responses by gender for the variable "Subject needed for particular career" (Chi-square = 13.097 with 2 df Sig = 0.0014)
- Economics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	59	(26.0)	50	(38.5)
A little	109	(48.0)	53	(40.8)
Not at all	59	(26.0)	27	(20.8)

Table 8.47 Distribution of student responses by gender for the variable "Thought Subject would be a challenge" (Chi-square = 6.103 with 2 df Sig = 0.0473)
- Economics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	78	(34.2)	62	(47.7)
A little	117	(51.3)	48	(36.9)
Not at all	33	(14.5)	20	(15.4)

Table 8.48 Distribution of student responses by gender for the variable "Thought subject would go well with other subjects" (Chi-square = 7.616 with 2 df Sig = 0.0222)
- Economics students

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	12	(5.3)	1	(0.8)
A little	33	(14.5)	9	(7.0)
Not at all	183	(80.3)	119	(92.2)

Table 8.49 Distribution of student responses by gender for the variable "Friend doing same subject" (Chi-square = 9.892 with 2 df Sig = 0.0071)
- Economics students
N.B. 1 out of 6 (16.7%) of the valid cells had an expected cell frequency less than 5.0

The overwhelming majority (84.0%) of sociology students were female. Chi-square analysis by gender revealed no significant differences, at the five per cent level, for any of the variables investigated.

The sexes were fairly evenly represented in art, with girls forming a slight majority (54.1%). Chi-square analysis suggests that girls are more influenced than boys by previous success in the subject (Table 8.50), when choosing to study art at A level.

Degree of influence	Gender			
	Male		Female	
	N	(%)	N	(%)
A lot	32	(52.5)	41	(56.2)
A little	15	(24.6)	26	(35.6)
Not at all	14	(23.0)	6	(8.2)

Table 8.50 Distribution of student responses by gender for the variable "Successful in this subject at O level/C.S.E." (Chi-square = 6.236 with 2 df Sig = 0.0442) - Art students

8.6 Restrictions on choice

The data obtained in response to the final part of the "Subject Choice" questionnaire (Appendix two D) show that 27.3% of the student cohort felt that their choice of A level subjects was in some way restricted. The reasons given by these four hundred and twenty-eight students were distributed as shown in Table 8.51.

From the results shown in Table 8.51 it is apparent that timetable restrictions, the availability of subjects and the lack of compatibility of subjects were the three most widespread restrictions on subject choice.

Subject not available at this school/college	129
Advised against studying a particular combination of subjects	111
Timetable restrictions made it impossible to study particular combination	164
Failed particular subject at O level so could not do that subject at A level	76
Had not done particular subject at O level so could not do that subject at A level	59
Teacher(s) would not allow me to do particular subject	33
Parents would not allow me to do particular subject	11
Limited success at O level left me little choice of A levels	85

Table 8.51 Restrictions on subject choice - distribution of reasons given by students N.B. Students were free to indicate more than one reason

Analysis of the results, using Chi-square, shows that the school students felt that their choice was restricted, more so than their counterparts in the colleges ($p < 0.01$) (Table 8.52). It is also interesting to note that, at the five per cent level of significance, boys apparently felt more restricted than girls in their choice of A level subjects (Table 8.53). No significant differences were found in terms of level of academic ability or subject specialisation.

	Institution type			
	Schools	S.F.C.	T.C.	F.E.
Restricted	255(36.4)	92(18.6)	56(21.4)	25(22.9)
Not restricted	445(63.6)	403(81.4)	206(78.6)	84(77.1)

Table 8.52 Restrictions on subject choice - distribution of student responses by institution type (Chi-square = 53.973 with 3 df Sig = 0.0000)

	Gender	
	Male	Female
Restricted	238(29.9)	180(24.1)
Not restricted	558(70.1)	568(75.9)

Table 8.53 Restrictions on subject choice - distribution of student responses in terms of gender (Corrected Chi-square = 6.359 with 1 df Sig = 0.0117)

The results reported in this chapter are discussed in Section 11.1.

Chapter nine

Student dissatisfaction with subjects at A-level

9.1 INTRODUCTION

The results reported in this chapter represent only a small part of the research project. In Phase I of the project (September 1986) the students indicated which subjects they had chosen to study at A level. Later in the first year (Phase II of the project, April 1987), the same cohort was asked to complete a further battery of instruments. Over eighty-three per cent of the students returned completed questionnaires. Questionnaire 5 (Appendix two F) provided information relating to any changes in their A level programme and also their retrospective choice of subjects if they had their time again. These results are reported in Sections 9.2 and 9.3 respectively. Section 9.4 provides an illustrative account of the reasons given by the students for their dissatisfaction.

The number of questionnaires returned dropped from 1307 in Phase II to 1023 in Phase III. By Phase IV the number had declined still further to 961. In view of the large numbers failing to return questionnaires it was decided to attempt to quantify the number of students who had actually left their school or college. The results of this analysis are included in Section 9.5 of this chapter.

9.2 Subject changes at A level

In total, 103 students had dropped at least one subject, representing 7.88% of the cohort. Statistical analysis using Chi-square revealed no significant differences, at the five per cent level, in terms of gender or type of institution attended. However, as might be expected, there was a significant difference ($p < 0.001$) in terms of academic ability, with those in the lower categories having dropped subjects more than those in the high ability group (Table 9.1).

	Level of academic ability		
	Low	**Medium**	**High**
	N (%)	**N (%)**	**N (%)**
One/more subjects dropped	41 (12.0)	34 (9.2)	28 (4.7)
No subjects dropped	302 (88.0)	336 (90.8)	563 (95.3)

Table 9.1 The distribution of students who had dropped one or more subjects by level of academic ability (Chi-square = 16.715 with 2 df Sig = 0.0002)

The results also suggest that students studying a mixed combination of subjects were more likely to change their A level programme than those who were specialised ($p = 0.05$), the arts students being the most stable group in this respect (Table 9.2).

	Subject specialisation		
	Artists	**Scientists**	**Mixed**
	N (%)	**N (%)**	**N (%)**
One/more subjects dropped	8 (4.9)	23 (6.2)	72 (9.4)
No subjects dropped	156 (95.1)	350 (93.8)	694 (90.6)

Table 9.2 The distribution of students who had dropped one or more subjects by subject specialisation (Chi-square = 5.963 with 2 df Sig = 0.0507)

As the unspecialised students were the least academic group, in terms of O-level passes, it is possible that this apparent difference between the specialisation groups could be a reflection of variation in academic ability. This was investigated by performing a Chi-square test on the same data, but excluding all students who were studying just one A level (all of whom were in the "unspecialised" group). This test failed to reveal any difference, significant at the five per cent level, between the specialisation groups.

The distribution of the 1307 students between the twelve subjects investigated, as recorded in Phase I of the project, is shown in Table 9.3. This table also shows the responses of the students (Phase II) when asked which subjects, if any, they had dropped since Phase I. The results suggest that physics is the largest single cause of dissatisfaction; with mathematics, sociology, economics, French and history also being abandoned by more than 3% of each group.

Subject	N (Phase I)	Dropped by Phase II N	(%)
English literature	417	7	(1.68)
Mathematics	530	23	(4.34)
Physics	358	16	(4.47)
Chemistry	352	6	(1.70)
Biology	239	2	(0.84)
French	137	5	(3.65)
German	49	1	(2.04)
Geography	220	3	(1.36)
History	259	9	(3.47)
Economics	309	12	(3.88)
Sociology	125	5	(4.00)
Art	103	0	(0.00)

Table 9.3 Proportion of students who had dropped each subject by Phase II

In order to gain a more complete picture of the fluctuations in student numbers within each subject group, the students were also asked which new subjects, if any, they had started to study since Phase I of the project. Eighty-four students (6.43%) had embarked upon new subjects. Presumably several of those who had dropped subjects were content to confine their studies to fewer A levels.

Chi-square tests revealed no significant differences, at the five per cent level, in terms of gender, type of institution attended or subject specialisation. There was a significant difference ($p < 0.05$) in terms of academic ability; with the high ability students being less likely to take on new subjects (Table 9.4). This can probably be explained by considering the number of A levels being taken initially by these students. Those taking four or five A levels might be less likely to feel the need to replace a subject they wished to abandon, as they were already taking sufficient subjects for entry to higher education. This need for replacement subjects may well be felt most strongly by those of lower ability studying less than three A levels.

	Level of academic ability		
	Low	Medium	High
	N (%)	N (%)	N (%)
One/more new subjects	24 (7.1)	32 (8.7)	28 (4.8)
No new subjects	314 (92.9)	335 (91.3)	560 (95.2)

Table 9.4 The take-up of new subjects by academic ability (Chi-square = 6.101 with 2 df Sig = 0.0473)

The distribution of students starting new subjects later in the first year is shown in Table 9.5. These results provide further evidence of "the flight from science" (T.E.S., 1987a). Not only were mathematics and physics the subjects most frequently dropped, the non-sciences were the most popular replacements.

Subject	Started	Change	
	N	N	(%)
English literature	5	- 2	(-0.48)
mathematics	3	-20	(-3.77)
physics	2	-14	(-3.91)
chemistry	0	- 6	(-1.70)
biology	2	0	(0.00)
French	1	- 4	(-2.92)
German	0	- 1	(-2.04)
geography	8	+ 5	(+2.27)
history	5	- 4	(-1.54)
economics	6	- 6	(-1.94)
sociology	9	+ 4	(+3.20)
art	4	+ 4	(+3.88)

Table 9.5 Number of students who had started each subject between Phase I and Phase II, and percentage change in choice.

9.3 Retrospective dissatisfaction with A levels

When asked if they would still choose to study A levels if they had their time again, sixty eight students (5.2%) indicated that they would not. Statistical analysis using Chi-square showed quite clearly that those of lower ability were most likely to regret choosing to study A levels (significance < 0.0001). The distribution of students in terms of academic ability is shown in Table 9.6.

	Level of academic ability		
	Low	Medium	High
	N (%)	N (%)	N (%)
Would not do A levels	34 (9.9)	18 (4.9)	16 (2.7)
Would do A levels	309 (90.1)	351 (95.1)	575 (97.3)

Table 9.6 Students who would/would not do A levels if they had their time again - by level of academic ability (Chi-square = 22.900 with 2 df Sig = 0.0000)

	Subject specialisation		
	Artists	Scientists	Mixed
	N (%)	N (%)	N (%)
Would not do A levels	6 (3.7)	11 (3.0)	51 (6.6)
Would do A levels	158 (96.3)	360 (97.0)	716 (93.4)

Table 9.7 Students who would/would not do A levels if they had their time again - by subject specialisation (Chi-square = 7.785 with 2 df Sig = 0.0204)

Analysis by subject specialisation (Table 9.7) suggests that those studying mixed combinations of subjects were significantly ($p < 0.05$) less satisfied with A levels than the arts and science specialists. It was initially hypothesized that this was probably a reflection of the differences in terms of academic ability, as the unspecialised students formed the majority of the low ability group. However, on repeating the analysis, but omitting all students who studied just one A level (all in the non-specialised group), it was found that p was still less than 0.05. Thus it seems that the difference in terms of subject specialisation is probably not simply a consequence of the differential distribution of academic ability.

No significant differences were found, at the five per cent level, in terms of gender or institution type.

Of those who would still choose to study for A levels, two hundred and ninety nine, almost a quarter of the students, would not choose the same subjects. Here there were no significant differences in terms of gender, institution type or academic ability, but there was a significant difference in terms of subject specialisation ($p < 0.001$), with the "pure" artists and scientists apparently being more satisfied with their chosen subjects than those studying mixed combinations of subjects. The distribution of students is shown in Table 9.8.

	Subject specialisation		
	Artists	Scientists	Mixed
	N (%)	N (%)	N (%)
Would not do same A levels	28 (17.8)	65 (18.6)	205 (28.9)
Would do same A levels	129 (82.2)	285 (81.4)	504 (71.1)

Table 9.8 Students who would/would not do the same A levels if they had their time again - by subject specialisation
(Chi-square = 17.886 with 2 df Sig = 0.0001)

The distribution of students responses for each of the twelve subjects investigated is shown in Table 9.9. Although all subjects had some students who expressed misgivings, economics, sociology, French, German, physics and history were once again the subjects causing most widespread dissatisfaction. It is interesting to note that almost 10% of the chemistry students regretted taking the

subject, despite the fact that only 1.7% of the initial group had actually dropped it by this stage. Similarly more than 10% of the "German" students were dissatisfied, although only 2.04% had actually abandoned the subject. Geography, biology and art were also causing discontent to more than 6% of each group. In contrast, although mathematics had suffered a fairly high drop-out rate, those remaining were, as a group, more satisfied than students in most other subject areas. English literature emerged as the only subject with a low drop-out rate and a high proportion (> 97%) of apparently satisfied students.

Examination of data relating to the retrospective uptake of subjects (Table 9.10) suggests a relatively widespread disaffection for the physical sciences and a preference for sociology and English literature. Apart from the physical sciences, economics would also suffer; the group diminishing by more than 6% if students had their time again.

Subject	N (Phase II)	Would not do N	(%)
English literature	410	12	(2.93)
Mathematics	507	29	(5.71)
Physics	342	33	(9.65)
Chemistry	346	34	(9.83)
Biology	237	17	(7.17)
French	132	15	(11.36)
German	48	5	(10.42)
Geography	217	14	(6.45)
History	250	25	(10.00)
Economics	297	47	(15.82)
Sociology	120	13	(10.83)
Art	103	8	(7.77)

Table 9.9 Proportion of students who would not choose each subject if they had their time again

Subject	Would do	Change	
	N	N	(%)
English literature	23	+11	(+2.68)
Mathematics	11	-18	(-3.55)
Physics	6	-27	(-7.89)
Chemistry	4	-30	(-8.67)
Biology	13	- 4	(-1.69)
French	9	- 6	(-4.55)
German	4	- 1	(-2.08)
Geography	14	0	(0.00)
History	20	- 4	(-1.60)
Economics	28	-19	(-6.40)
Sociology	24	+11	(+9.17)
Art	9	+ 1	(+0.97)

Table 9.10 Proportion of students who would choose each subject if they had their time again, and percentage change in retrospective choice

9.4 Reasons for dissatisfaction

The reasons given by students for dropping subjects (Appendix five A), or not choosing subjects if they had their time again (Appendix five B), were grouped into seven broad categories as indicated below:

1) Referring to difficulty e.g. very hard, can't cope, too demanding
2) Referring to work load e.g. too time-consuming, too many facts, too much to learn
3) Referring to enjoyment e.g. boring, don't like it, not interesting
4) Referring to future use e.g. not needed, not useful, irrelevant to career
5) Referring to inadequate background e.g. no O-level, poor O-level
6) Referring to teachers or teaching e.g. bad teaching, teaching too fast, badly presented
7) Any other reason not separately classified

The validity of the classification of the reasons, as shown in Appendices five A and B, was assessed by asking two independent educationalists to separately classify a sample of students' reasons, using the scheme outlined above. The absence of any major disparity between these two classifications and that used by the author indicated that the classification was sufficiently valid for the purpose intended. Further analysis was felt to be inappropriate as this was only a very small part of the whole study, and in any event the above categories cannot necessarily be regarded as discrete entities because of the degree of overlap that inevitably exists between such variables. For example, if a student is experiencing considerable difficulty it is likely that he/she is also not enjoying that subject. Similarly a student may complain that a subject is boring and also remark on the poor quality of the teaching. Other students may fail to connect such variables. Notwithstanding such inconsistencies, scrutiny of these stated reasons does provide a useful subjective view of the problems underlying student dissatisfaction.

The distribution of reasons for dropping each of the subjects investigated, as classified above, is shown in Table 9.11. Although the number of students actually making changes was rather small, when this distribution is considered with that for wished for retrospective changes, as shown in Table 9.12, some interesting trends emerge.

In both Tables it is apparent that subject difficulty (Reason 1) is the major cause of dissatisfaction, this being particularly evident amongst students who would not choose mathematics, physics or chemistry if they had their time again. A relatively large number of students also mentioned this variable as a reason for regretting choosing economics. There was some evidence of a similar problem amongst language students, but here the numbers involved were rather too small to draw any firm conclusions.

Subjects	**Reasons[+]**							**Totals***
	1	**2**	**3**	**4**	**5**	**6**	**7**	
English (n=7)		3 (42.9)	4 (57.1)					7/7
Maths (n=23)	18 (62.1)	4 (13.8)	2 (6.9)		2 (6.9)	1 (3.4)	2 (6.9)	29/23
Physics (n=16)	7 (31.8)	4 (18.2)	2 (9.1)		1 (4.5)	2 (9.1)	6 (27.3)	22/16
Chemistry (n=6)	6 (75.0)	1 (12.5)	1 (12.5)					8/6
Biology (n=2)	2 (50.0)					1 (25.0)	1 (25.0)	4/2
French (n=5)	1 (20.0)		2 (40.0)			1 (20.0)	1 (20.0)	5/4
German (n=1)		1 (100)						1/1
Geography (n=3)	1 (33.3)		1 (33.3)				1 (33.3)	3/3
History (n=9)	3 (23.0)	3 (23.0)	2 (15.4)	2 (15.4)	2 (15.4)		1 (7.7)	13/9
Economics (n=12)	5 (33.3)	1 (6.7)	4 (26.7)	1 (6.7)		1 (6.7)	3 (20.0)	15/12
Sociology (n=5)	2 (25.0)	1 (12.5)	3 (37.5)			2 (25.0)		8/5
TOTAL No.	45	18	21	3	5	8	15	115
% of all reasons given	(39.1)	(15.7)	(18.3)	(2.6)	(4.3)	(7.0)	(14.0)	(100)

Table 9.11 Reasons given by students for dropping subjects (Phase II)

* Expressed as number of reasons / number of students giving reasons

\+ see page 202 for descriptions

The second largest expressed cause of dissatisfaction resulted from students' dislike of the subjects they had chosen (Reason 3). Here the number of students actually making changes was, once again, rather small. However, history and economics both had reasonably substantial numbers of students who would not have chosen these subjects, for this reason, if they had their time again.

Subjects	Reasons+							Totals*
	1	2	3	4	5	6	7	
English (n=12)	5 (35.7)	2 (14.3)	3 (21.4)			1 (7.1)	3 (21.4)	14/12
Maths (n=29)	19 (54.3)	1 (2.9)	2 (5.7)	2 (5.7)	2 (5.7)	2 (5.7)	7 (20.0)	35/29
Physics (n=33)	20 (43.5)	2 (4.4)	8 (17.4)	5 (10.9)	1 (2.2)	3 (6.5)	7 (15.2)	46/33
Chemistry (n=34)	19 (46.3)	1 (2.4)	7 (17.1)	2 (4.9)		4 (9.8)	8 (19.5)	41/34
Biology (n=17)	6 (24.0)	5 (20.0)	5 (20.0)	2 (8.0)	1 (4.0)		6 (24.0)	25/17
French (n=15)	10 (50.0)		2 (10.0)	1 (5.0)	2 (10.0)	1 (5.0)	4 (20.0)	20/15
German (n=5)	3 (60.0)		1 (20.0)			1 (20.0)		5/5
Geography (n=14)	4 (22.2)	1 (5.6)	5 (27.7)	3 (16.7)		4 (22.2)	1 (5.6)	18/14
History (n=25)	8 (25.8)	1 (3.2)	11 (35.5)	3 (9.7)		1 (3.2)	7 (22.6)	31/25
Economics (n=47)	19 (32.2)	4 (6.8)	19 (32.2)	3 (5.1)	1 (1.6)	4 (6.8)	9 (15.3)	59/45
Sociology (n=13)	4 (23.5)	1 (5.9)	5 (29.4)	3 (17.6)	1 (5.9)	1 (5.9)	2 (11.8)	17/13
Art (n=8)	1 (10.0)	1 (10.0)	2 (20.0)			2 (20.0)	4 (40.0)	10/8
TOTAL No.	118	19	70	24	8	24	55	318
% of all reasons given	(37.1)	(6.0)	(22.0)	(7.5)	(2.5)	(7.5)	(17.3)	(99.9)

Table 9.12 Reasons given by students for not choosing subjects if they had their time again (Phase II)
* Expressed as number of reasons / number of students giving reasons
\+ see page 202 for descriptions

Apart from those reasons which were not separately classified, the remaining reasons cited by students were distributed fairly evenly between the other four defined categories. None had sufficiently large numbers of students to justify any firm conclusions, but there is evidence to suggest that continuing biology students were more troubled than others by an excessive work load (Reason 2).

A considerable number of reasons fell within the "category not separately classified" (Reason 7), but these varied widely from specific criticisms such as "too literature based" (French) and "all maths" (Chemistry), to vague statements such as "not what I expected" (Economics) and "prefer to follow arts subjects" (Biology and Chemistry). Whilst the vague statements can be discarded as of no diagnostic value, some of the remaining unclassified sentiments, although expressed by minorities of students, do provide an interesting insight into some of the specific problems encountered by students. For instance, two ex-physics students made reference to timetable problems in their reasons for dropping the subject, and another felt uncomfortable as the only girl in the group. In English two of the twelve dissatisfied continuing students made reference to the antiquity of the works they were studying. Similarly two of the dissatisfied history students referred to the period of history they were studying. In physics, three continuing

students made specific reference to the Nuffield nature of their course as a reason for their dissatisfaction.

9.5 The decline in the student cohort

The decrease in the number of completed questionnaires returned over the duration of the study is shown in Table 9.13.

Phase	Number of students	Drop-out	
		N	(%)
I	1569		
II	1307	262	(16.7)
III	1023	284	(21.7)
IV	961	62	(6.1)
		608	(38.8)

Table 9.13 Decline in student numbers participating in study

The unexpectedly large decline prompted investigation of possible reasons. These were initially hypothesized to be as follows:

1) Absence of students during administration of questionnaires
2) Reluctance of students to take further part in project
3) Reluctance of tutors to encourage student participation
4) Students leaving current A level course

Although tutors administering the questionnaires were asked to indicate whether students had ceased to study A levels, few actually did so. Similarly few indicated the absence of students. Thus leading to the conclusion that there was either a growing reluctance amongst the students to take further part in the project, or alternatively a reluctance amongst tutors to pursue the completion and return of the questionnaires with their students.

Subsequently all institutions were contacted, either by telephone or letter, and asked to account for students who had not returned questionnaires. The results were surprising in that they revealed that many more students had left the course than was initially indicated by tutors. The distribution of these "leavers" between the various types of institution is shown in Table 9.14. Details for individual institutions are given in appendix six.

Institution type	Original number of students taking part	Leavers N	(%)
Schools	702	90	(12.82)
Sixth Form Colleges	497	63	(12.68)
Tertiary Colleges	261	34	(13.03)
Colleges of Further Ed.	109	27	(24.77)
	1569	214	(13.64)

Table 9.14 Students leaving A level course prior to examination

The figures given in Table 9.14 refer to those students who left their A level course without sitting the terminal examinations in the summer of 1988. It should be noted that there is no indication of the stage at which they left e.g. end of first term, second term etc.. Although such an analysis was initially attempted, it proved to be impracticable in view of the degree of uncertainty surrounding many students, for example those who eventually left officially after a long period of poor attendance.

From the results shown in Table 9.14 it is apparent that almost fourteen per cent of the students who embarked upon A levels did not complete the course. Hence 394 students dropped out of this research project for reasons other than leaving their school or college; representing 25.1% of the initial cohort. Many were known to be absent on the day of issue, but any further analysis was beyond the remit of this project.

The results reported in this chapter are discussed in Section 11.2.

Chapter ten

Students' perceptions of A level courses

10.1 Introduction

The results reported in this chapter were obtained using the "Perspectives" questionnaire (Appendix two E) which was administered to the participating students on each of the four occasions described in Section 7.2. Eight hundred and fifty one students completed the questionnaires that were issued on the final occasion, and had also completed all previous "Perspectives" questionnaires. All analyses described in this chapter were restricted to this cohort of eight hundred and fifty-one students. The results reported here are discussed in detail in Section 11.3.

10.2 Students' initial perceptions

This section reports students' initial perceptions of various dimensions of A level work. The data was gathered during September/October of the first year of their A level courses. The analyses were restricted to the factors identified in Section 7.4.5.

10.2.1 Students' feelings about A level work and A level teachers

From the results shown in Table 10.1 it seems that the majority of students had fairly positive initial perceptions of A level work. Over eighty per cent of the cohort felt that A level courses often dealt with interesting issues (item 36) and a similar proportion of

students disagreed with the notion that A level work was boring (item 08). More than seventy per cent disagreed with the statement that there was little opportunity for discussion (item 34). Over sixty per cent disagreed with the view that A levels did not prepare students for their future careers (item 49) and a similar proportion disagreed with the statement that A level work was largely irrelevant to everyday life (item 39). More than ninety per cent felt that A level education encouraged students to think for themselves (item 43).

	Response (N(%))				
Items	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
01	88(10.3)	355(41.7)	264(31.0)	121(14.2)	23(2.7)
08	13(1.5)	40(4.7)	113(13.3)	383(45.0)	302(35.5)
09	6(0.7)	35(4.1)	178(20.9)	419(49.2)	213(25.0)
10	16(1.9)	111(13.0)	111(13.0)	463(54.4)	150(17.6)
12	125(14.7)	358(42.1)	218(25.6)	127(14.9)	23(2.7)
18	15(1.8)	61(7.2)	122(14.3)	417(49.0)	236(27.7)
25	95(11.2)	122(14.3)	170(20.0)	399(46.9)	65(7.6)
27	63(7.4)	220(25.9)	164(19.3)	357(42.0)	47(5.5)
28	49(5.8)	194(22.8)	214(25.1)	336(39.5)	58(6.8)
30	67(7.9)	179(21.0)	167(19.6)	382(44.9)	56(6.6)
31	17(2.0)	99(11.6)	173(20.3)	472(55.5)	90(10.6)
32	15(1.8)	45(5.3)	146(17.2)	491(57.7)	154(18.1)
34	20(2.4)	92(10.8)	122(14.3)	464(54.5)	153(18.0)
35	30(3.5)	195(22.9)	180(21.2)	342(40.2)	104(12.2)
36	173(20.3)	527(61.9)	101(11.9)	41(4.8)	9(1.1)
37	30(3.5)	144(16.9)	244(28.7)	381(44.8)	52(6.1)
38	78(9.2)	429(50.4)	244(28.7)	89(10.5)	11(1.3)
39	29(3.4)	126(14.8)	180(21.2)	410(48.2)	106(12.5)
43	210(24.7)	582(68.4)	50(5.9)	6(0.7)	3(0.4)
45	47(5.5)	168(19.7)	309(36.3)	307(36.1)	20(2.4)
49	41(4.8)	88(10.3)	191(22.4)	409(48.1)	122(14.3)
53	24(2.8)	129(15.2)	283(33.3)	360(42.3)	55(6.5)
55	140(16.5)	149(17.5)	143(16.8)	304(35.7)	115(13.5)

Table 10.1 Students' initial perceptions of A level work and A level teachers

Approximately half the students felt that they had been well-prepared for A level work, whilst over thirty per cent were "not sure" (item 01). However, over seventy per cent felt they were not having difficulty keeping up with the work set (item 10) and a similar proportion did not feel that they had difficulty identifying with the subjects they were studying (item 09). Almost eighty per cent felt that they were sufficiently mature to plan out all their own work (item 18).

The positive perceptions outlined above also extended to students' views of A level teachers. Over seventy-five per cent disagreed with the notion that most teachers are not interested in discussing work with students outside lesson time (item 32). More than sixty-five per cent did not think that teachers were too formal in their approach to students (item 31). The responses to other statements about teachers, for example, items 27, 28 and 30, also suggested that students generally had fairly positive perceptions of their A level teachers.

10.2.2 Students' attitudes towards competition and the importance of grades

Responses to the items comprising this factor (Table 10.2) show that over sixty per cent of the students perceived A level work to be very competitive (item 33), but over fifty per cent of the whole cohort did not feel that it was important to be ahead of other people in the group (item 11). More than sixty-five per cent felt that

grades were a motivating factor in making them work harder (item 54), but almost forty-four per cent felt that students placed too much emphasis on grades (item 46). Over fifty-five per cent of the students felt that they learned more in lessons than they did in their own time (item 03) and almost fifty per cent would have liked more time to discuss their work with teachers on an individual basis (item 04).

	Response (N(%))				
Items	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
03	45(5.3)	97(11.4)	218(25.6)	416(48.9)	75(8.8)
04	113(13.3)	301(35.4)	251(29.5)	166(19.5)	20(2.4)
11	46(5.4)	156(18.3)	217(25.5)	340(40.0)	92(10.8)
33	138(16.2)	391(45.9)	188(22.1)	123(14.5)	11(1.3)
46	79(9.3)	293(34.4)	240(28.2)	211(24.8)	28(3.3)
51	151(17.7)	454(53.3)	190(22.3)	49(5.8)	7(0.8)
54	130(15.3)	447(52.5)	149(17.5)	106(12.5)	19(2.2)

Table 10.2 Students' initial attitudes towards competition and the importance of grades

10.2.3 Students' perceptions of the role of teachers

From the students' responses to the items comprising this factor (Table 10.3) it is apparent that, despite the positive approach described in Section 10.2.1, the majority of students expected to be "spoon-fed" all that they needed to know for A levels. Almost seventy per cent agreed that teachers should provide all the information needed for the examination (item 24). Only twenty-one per cent agreed that teachers should not present facts, but should act as guides to students' independent study (item 21).

Items	Response (N(%))				
	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
20	12(1.4)	84(9.9)	134(15.7)	426(50.1)	195(22.9)
21	25(2.9)	151(17.7)	228(26.8)	334(39.2)	113(13.3)
24	250(29.4)	336(39.5)	105(12.3)	145(17.0)	15(1.8)
47	240(28.2)	363(42.7)	141(16.6)	92(10.8)	15(1.8)

Table 10.3 Students' initial perceptions of the role of teachers

Over seventy per cent agreed that A levels were the key to future success (item 47).

10.3 Changes in students' perceptions of A level work

The "Perspectives" questionnaire was administered to the students on three subsequent occasions as described in Section 7.2. The data gathered on all four occasions, for each item of the three factors identified, was subjected to analysis of variance to see whether any differences existed. For those items where significant differences were found paired T-tests were used to identify the locus of these differences. This section reports on these changes in students perceptions of A level work.

10.3.1 Changes in students' feelings about A level work and A level teachers

The items comprising this factor yielded a number of significant changes over time. The results of the analysis of variance for those items with F values which were significant at or beyond the 0.05 level are shown in Table 10.4.

Items	F	level of significance of F
01	41.97	>0.001
08	27.83	>0.001
09	15.27	>0.001
10	9.38	>0.001
12	40.33	>0.001
18	6.18	>0.001
25	9.74	>0.001
30	2.94	>0.05
34	2.73	>0.05
35	8.33	>0.001
36	16.89	>0.001
38	115.59	>0.001
39	28.66	>0.001
43	34.60	>0.001
45	7.67	>0.001
49	43.55	>0.001
53	9.39	>0.001
55	4.29	>0.01

Table 10.4 Results of analysis of variance for those items in Factor 1 where F was significant at or beyond the 0.05 level

In order to locate the locus of the differences shown in Table 10.4 it was necessary to proceed to paired T-tests for each item. The results of these analyses are shown in Tables 10.5 to 10.24.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(01)	2.57	0.94		
2(01)	2.95	1.08	10.32	>0.001
2(01)	2.95	1.08		
3(01)	3.07	1.12	3.45	>0.01
3(01)	3.07	1.12		
4(01)	3.07	1.09	0.07	ns

Table 10.5 A comparison of pairs of occasions for item 01 to establish the level of difference between them (N=850, df=849)

Item 01 consisted of the statement "I feel that I was well prepared for A level work". From Table 10.5 it is apparent that there was a significant move away from

agreement with this statement by occasion two, towards the end of the first year. By the beginning of the second year (occasion 3) it seems that the mean response of the students had stabilised, there being no significant differences between the data obtained for the third and fourth occasions.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(08)	4.08	0.90		
2(08)	3.90	0.92	5.41	>0.001
2(08)	3.90	0.92		
3(08)	3.79	0.98	3.35	>0.01
3(08)	3.79	0.98		
4(08)	3.67	1.05	3.92	>0.001

Table 10.6 A comparison of pairs of occasions for item 08 to establish the level of difference between them (N=850, df=849)

In Table 10.6 it is apparent that although the students tended to disagree with the statement "I find A level work boring", they disagreed less on each occasion the questionnaires were completed.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(09)	3.94	0.83		
2(09)	3.81	0.80	4.04	>0.001
2(09)	3.81	0.80		
3(09)	3.80	0.86	0.26	ns
3(09)	3.80	0.86		
4(09)	3.66	0.93	4.56	>0.001

Table 10.7 A comparison of pairs of occasions for item 09 to establish the level of difference between them (N=850, df=849)

From the results shown in Table 10.7 it is apparent that as students progressed through the course they tended to disagree less with the statement "I find it difficult to identify with the subjects I am studying". The implication here being that students were increasingly questioning their relationships with the subjects they had chosen.

Table 10.8 refers to the statement "I have difficulty keeping up with the work set" (item 10). The results indicate that the tendency to disagree with this statement, evident at the beginning of the course, had diminished by the end of the first year and was sustained at a fairly constant level for the remainder of the course.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(10)	3.73	0.96		
2(10)	3.53	0.95	5.80	>0.001
2(10)	3.53	0.95		
3(10)	3.53	0.98	0.00	ns
3(10)	3.53	0.98		
4(10)	3.53	0.98	0.04	ns

Table 10.8 A comparison of pairs of occasions for item 10 to establish the level of difference between them (N=850, df=849)

Item 12 was also concerned with students' perceptions of their progress. From Table 10.9 it is apparent that, in comparison to the beginning of the course, students approaching the end of their first year agreed more with the statement "I feel I could probably do better than I am doing at the moment".

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(12)	2.49	1.00		
2(12)	2.12	0.90	11.07	>0.001
2(12)	2.12	0.90		
3(12)	2.09	0.94	0.92	ns
3(12)	2.09	0.94		
4(12)	2.04	0.93	1.45	ns

Table 10.9 A comparison of pairs of occasions for item 12 to establish the level of difference between them (N=850, df=849)

From Table 10.10 it seems that students beginning their A level studies had more confidence, than they did later on, in their ability to plan out all their own work (item 18). However, the picture here is confused by the trend moving in the opposite direction between occasions two and three (significance > 0.05).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(18)	3.94	0.93		
2(18)	3.79	0.88	4.27	>0.001
2(18)	3.79	0.88		
3(18)	3.86	0.83	2.15	>0.05
3(18)	3.86	0.83		
4(18)	3.77	0.92	2.72	>0.01

Table 10.10 A comparison of pairs of occasions for item 18 to establish the level of difference between them (N=850, df=849)

From Table 10.11 it is apparent that as students passed though the course they tended to disagree more with the notion that it is a complete waste of time for teachers to deal with material that is not on the syllabus (item 25).

However, by the beginning of the second year this view seems to have stabilised.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(25)	3.26	1.14		
2(25)	3.43	1.02	4.27	>0.001
2(25)	3.43	1.02		
3(25)	3.51	1.03	2.24	>0.05
3(25)	3.51	1.03		
4(25)	3.49	1.04	0.58	ns

Table 10.11 A comparison of pairs of occasions for item 25 to establish the level of difference between them (N=850, df=849)

Table 10.12 refers to the item "Most teachers would never admit that they were wrong" (item 30). Although the means were all within the "not sure" category, the results do suggest that students in their second year disagreed more with this notion.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(30)	3.22	1.09		
2(30)	3.22	1.04	0.21	ns
2(30)	3.22	1.04		
3(30)	3.31	1.04	2.23	>0.05
3(30)	3.31	1.04		
4(30)	3.34	1.07	0.92	ns

Table 10.12 A comparison of pairs of occasions for item 30 to establish the level of difference between them (N=850, df=849)

In general terms the students tended to disagree with the statement that A level lessons provide little opportunity

for discussion (item 34). However, the students approaching the end of the course disagreed with this statement less than when they were just beginning their second year (Table 10.13).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(34)	3.95	0.95		
2(34)	3.76	0.97	0.25	ns
2(34)	3.76	0.97		
3(34)	3.73	0.97	0.83	ns
3(34)	3.73	0.97		
4(34)	3.64	0.99	2.38	>0.05

Table 10.13 A comparison of pairs of occasions for item 34 to establish the level of difference between them (N=850, df=849)

Similarly, as the final examinations approached, the students were less likely to disagree with the notion that A level work consists largely of facts to be memorised (Table 10.14).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(35)	3.35	1.07		
2(35)	3.25	1.18	2.28	>0.05
2(35)	3.25	1.18		
3(35)	3.25	1.16	0.03	ns
3(35)	3.25	1.16		
4(35)	3.08	1.16	4.23	>0.001

Table 10.14 A comparison of pairs of occasions for item 35 to establish the level of difference between them (N=850, df=849)

From Table 10.15 it can be seen that although students generally found the content of A level courses interesting (item 36), this tendency diminished as they progressed through the course.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(36)	2.04	0.78		
2(36)	2.15	0.81	3.59	>0.001
2(36)	2.15	0.81		
3(36)	2.21	0.84	1.97	>0.05
3(36)	2.21	0.84		
4(36)	2.32	0.90	3.74	>0.001

Table 10.15 A comparison of pairs of occasions for item 36 to establish the level of difference between them (N=850, df=849)

At the beginning of their A level studies the students tended to agree that there was little opportunity for original research (item 38), but by the end of the first year their views had changed; they were now less likely to agree with this statement (Table 10.16).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(38)	2.44	0.85		
2(38)	3.24	1.01	15.64	>0.001
2(38)	3.24	1.01		
3(38)	3.17	1.06	1.92	ns
3(38)	3.17	1.06		
4(38)	3.12	1.10	1.31	ns

Table 10.16 A comparison of pairs of occasions for item 38 to establish the level of difference between them (N=850, df=849)

Item 39 revealed an interesting change in students perceptions of the relevance of A level work to everyday life. Although at the beginning of the course the students generally felt that A levels had some relevance, as the course progressed they became increasingly less likely to disagree with the statement that A level work is largely irrelevant to everyday life (Table 10.17).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(39)	3.52	1.00		
2(39)	3.30	1.10	5.57	>0.001
2(39)	3.30	1.10		
3(39)	3.12	1.13	4.60	>0.001
3(39)	3.12	1.13		
4(39)	3.07	1.14	1.33	ns

Table 10.17 A comparison of pairs of occasions for item 39 to establish the level of difference between them (N=850, df=849)

Item 43 yielded a similar change in students responses to the statement "A level education encourages students to think for themselves". Although the students initially tended to agree with this view, they agreed less by the end of the first year, and there was even less agreement by the final stages of the course (Table 10.18).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(43)	1.84	0.58		
2(43)	2.02	0.65	6.95	>0.001
2(43)	2.02	0.65		
3(43)	2.07	0.73	1.67	ns
3(43)	2.07	0.73		
4(43)	2.18	0.82	3.53	>0.001

Table 10.18 A comparison of pairs of occasions for item 43 to establish the level of difference between them (N=850, df=849)

Item 45 also related to autonomy in learning. Although the mean response suggests that students were generally rather unsure about this statement at the beginning of the course, by the beginning of the second year they were more likely to disagree with the statement "A level students have to rely too much on their own initiative" (Table 10.19).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(45)	3.10	0.93		
2(45)	3.15	0.91	1.47	ns
2(45)	3.15	0.91		
3(45)	3.28	0.87	3.87	>0.001
3(45)	3.28	0.87		
4(45)	3.25	0.91	1.01	ns

Table 10.19 A comparison of pairs of occasions for item 45 to establish the level of difference between them (N=850, df=849)

Item 49, like item 39, was concerned with the usefulness of A level education. From Table 10.20 it is apparent that although the students initially tended to disagree with the statement that A level education does not prepare students for their future careers, as the course progressed the students became less likely to disagree.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(49)	3.57	1.02		
2(49)	3.26	1.05	7.36	>0.001
2(49)	3.26	1.05		
3(49)	3.13	1.08	3.35	>0.01
3(49)	3.13	1.08		
4(49)	3.01	1.07	2.88	>0.01

Table 10.20 A comparison of pairs of occasions for item 49 to establish the level of difference between them (N=850, df=849)

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(53)	3.35	0.91		
2(53)	3.21	0.98	3.49	>0.01
2(53)	3.21	0.98		
3(53)	3.21	1.03	0.06	ns
3(53)	3.21	1.03		
4(53)	3.09	1.02	3.46	>0.01

Table 10.21 A comparison of pairs of occasions for item 53 to establish the level of difference between them (N=850, df=849)

From the results shown in Table 10.21 it is interesting to note that the students became increasingly less likely to disagree with the statement "Striving for good grades interferes with real learning". This trend was apparent both during the first year and during the second year.

After completing the first year of the course the students were more likely to disagree with the notion that the whole course would have been a waste of time if they failed the final examinations (Item 55 - Table 10.22).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(55)	3.12	1.31		
2(55)	3.13	1.32	0.18	ns
2(55)	3.13	1.32		
3(55)	3.30	1.30	3.94	>0.001
3(55)	3.30	1.30		
4(55)	3.28	1.32	0.39	ns

Table 10.22 A comparison of pairs of occasions for item 55 to establish the level of difference between them (N=850, df=849)

10.3.2 Changes in students' attitudes towards competition and the importance of grades

Of the seven items which comprised this factor, four yielded changes over time which had F values which were significant at or beyond the 0.05 level. The results of the analysis of variance for these items are shown in Table 10.23.

Items	F	level of significance of F
03	10.40	>0.001
11	2.87	>0.05
46	32.46	>0.001
54	2.68	>0.05

Table 10.23 Results of analysis of variance for those items in Factor 2 where F was significant at or beyond the 0.05 level

In order to locate the locus of the differences shown in Table 10.23 it was necessary to proceed to paired T-tests for each item. The results of these analyses are shown in Tables 10.24 to 10.27.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(03)	3.45	0.99		
2(03)	3.41	0.96	0.99	ns
2(03)	3.41	0.96		
3(03)	3.31	0.98	2.78	>0.01
3(03)	3.31	0.98		
4(03)	3.20	1.05	3.30	>0.01

Table 10.24 A comparison of pairs of occasions for item 03 to establish the level of difference between them (N=850, df=849)

From the results shown in Table 10.24 it seems that as students moved into their second year they placed less value on lessons and more value on their own time for learning (item 03). This trend continued as the examinations became more imminent.

Unlike most of the other items with significant F values, the statement concerned with students' perception of the importance of competition with other students (Item 46) failed to reveal any consistent trends (Table 10.25).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(11)	3.32	1.06		
2(11)	3.22	1.10	3.34	>0.01
2(11)	3.22	1.10		
3(11)	3.32	1.12	3.27	>0.01
3(11)	3.32	1.12		
4(11)	3.36	1.07	1.18	ns

Table 10.25 A comparison of pairs of occasions for item 11 to establish the level of difference between them (N=850, df=849)

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(46)	2.79	1.03		
2(46)	2.59	1.02	4.62	>0.001
2(46)	2.59	1.02		
3(46)	2.38	1.08	5.35	>0.001
3(46)	2.38	1.08		
4(46)	2.35	1.05	0.86	ns

Table 10.26 A comparison of pairs of occasions for item 46 to establish the level of difference between them (N=850, df=849)

In contrast, from Table 10.26 it can clearly be seen that as students progressed through to the second year of the course they were more likely to agree with the statement that A level students place too much emphasis on grades (Item 46). No significant differences were found between the third and fourth occasions, as the final examinations approached.

Despite the above findings the students tended to agree that the thought of failure or not getting good enough grades made them work harder (Item 54). However, this

tendency had diminished by the end of the first year (Table 10.27).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(54)	2.34	0.96		
2(54)	2.43	1.01	2.59	>0.05
2(54)	2.43	1.01		
3(54)	2.43	1.00	0.06	ns
3(54)	2.43	1.00		
4(54)	2.47	1.05	1.03	ns

Table 10.27 A comparison of pairs of occasions for item 54 to establish the level of difference between them (N=850, df=849)

10.3.3 Changes in students' perceptions of the role of teachers

Three of the four items which comprised this factor yielded changes over time which were significant at or beyond the 0.05 level. The results of the analysis of variance for these items are shown in Table 10.28.

In order to locate the locus of the differences shown in Table 10.28 it was necessary to proceed to paired T-tests for each item. The results of these analyses are shown in Tables 10.29 to 10.31.

Items	F	level of significance of F
20	17.25	>0.001
24	7.7	>0.001
47	7.36	>0.001

Table 10.28 Results of analysis of variance for those items in Factor 3 where F was significant at or beyond the 0.05 level

From Table 10.3 and Table 10.29 it is apparent that the majority of students initially disagreed with the statement that teachers should only provide the basic principles of a subject. However, as the students progressed through the course they disagreed less strongly with this view.

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(20)	3.83	0.94		
2(20)	3.67	0.95	4.52	>0.001
2(20)	3.67	0.95		
3(20)	3.59	0.94	2.23	>0.05
3(20)	3.59	0.94		
4(20)	3.51	0.96	2.33	>0.05

Table 10.29 A comparison of pairs of occasions for item 20 to establish the level of difference between them (N=850, df=849)

Similarly as the students approached the end of the first year they were less likely to agree with the view that teachers should provide all the information a student needs to know for the examination (Item 24). A similar trend was discernible between the beginning and the end of the second year (Table 10.30).

Analysis of the data for item 47 revealed that the majority of students initially felt that A level education was the key to future success (Section 10.2.3). However, agreement with this statement diminished, on each occasion, between the beginning of the first year and the beginning of the second year (Table 10.31).

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(24)	2.23	1.09		
2(24)	2.43	1.15	4.71	>0.001
2(24)	2.43	1.15		
3(24)	2.38	1.14	1.22	ns
3(24)	2.38	1.14		
4(24)	2.47	1.14	2.38	>0.05

Table 10.30 A comparison of pairs of occasions for item 24 to establish the level of difference between them (N=850, df=849)

Occasion (variable)	Mean	Standard deviation	T value	Level of significance
1(47)	2.15	1.01		
2(47)	2.29	1.03	3.68	>0.001
2(47)	2.29	1.03		
3(47)	2.37	1.10	2.16	>0.05
3(47)	2.37	1.10		
4(47)	2.35	1.10	0.47	ns

Table 10.31 A comparison of pairs of occasions for item 47 to establish the level of difference between them (N=850, df=849)

The results reported in this chapter are discussed in Section 11.3.

Chapter eleven

Discussion

11.1 Variables affecting subject choice

From the results reported in Section 8.1 it is apparent that for all subjects investigated, with the exception of mathematics, physics and chemistry, the belief that the subject would be interesting was the variable which strongly influenced most students' choice of subjects for study at A level. This was especially true of art, biology and geography, where over seventy-three per cent of students indicated that this variable had influenced them a lot. This finding is in accord with those of several other research projects which have noted the major role of interest in subject choice at A level, for example, McNair (1970), Backhouse et al (1982), and Garratt (1985). The importance of this variable in structuring student choice is emphasised by the fact that it is not only prominent in initial subject choice (Section 5.4), but also extends beyond A level to choice of subject for study at degree level (Bosworth and Ford, 1985).

Other influential variables, for many students, were previous success in the subject and the perceived compatibility of the subject with other subjects chosen.

The influence of previous success, or competence in a subject, has been stressed by several other researchers (see Section 5.5), for example, McNair (1970), Ryrie (1981), Backhouse et al (1982) and Garratt (1985). The

results of this study confirm the importance of this variable in subject choice at A level, with over fifty per cent of students in most of the subjects investigated indicating that previous success had a lot of influence on their choice. The most obvious exceptions to this generalisation were economics and sociology which were not widely available in the sample schools. It seems likely that the importance of previous success as a variable affecting subject choice is a consequence of its perceived predictive value of success at A level. Certainly this is the implication of Ryrie's conclusion (1981) that, for his sample of Scottish pupils, decisions about subjects were largely determined by the decisions made two years earlier about subjects to be studied at O grade, and the results of those examinations at the end of the fourth year.

The results of this study, whilst confirming the importance of previous success, do not suggest that this variable is of greater importance for the majority of students than the interest value of most of the subjects investigated. Indeed, mathematics was the only subject where the variable concerning previous success attracted the largest proportion of students (62.1%) (Table 8.1). Nevertheless, the importance of previous success, as a variable affecting subject choice at A level, emphasises the importance for young people of making appropriate decisions when faced with initial subject choice, usually during the third year of secondary education.

The compatibility variable, "thought subject would go well with other subjects", strongly influenced the largest proportions of students who had chosen to study physics and chemistry (65.2% and 62.6% respectively). This variable was also perceived as important by substantial proportions of students in most other subjects, the most notable exception being art. This perceived lack of importance for art students may indicate that art is perceived to 'stand alone' amongst subjects, no other subject being seen as necessary to complement it. Alternatively the lack of importance of this variable for art students may be linked to their generally inferior level of academic attainment, as judged in terms of number of O level passes (Table 11.1). In some instances their pattern of success at O level or equivalent may not have permitted a rational choice of subjects for study at A level, indeed in some cases art was the only subject being studied at this level.

	Level of academic ability					
	Low		Medium		High	
	N	(%)	N	(%)	N	(%)
English literature	156	(30.3)	154	(29.9)	205	(39.8)
Mathematics	110	(18.4)	177	(29.6)	310	(51.9)
Physics	62	(15.7)	113	(28.5)	221	(55.8)
Chemistry	59	(15.2)	90	(23.1)	240	(61.7)
Biology	53	(19.6)	52	(19.3)	165	(61.1)
French	18	(10.8)	36	(21.6)	113	(67.1)
German	10	(16.1)	11	(17.7)	41	(66.1)
Geography	67	(25.9)	84	(32.4)	108	(41.7)
History	80	(25.5)	93	(29.6)	141	(44.9)
Economics	114	(31.1)	108	(29.4)	145	(39.5)
Sociology	63	(38.4)	59	(36.0)	42	(25.6)
Art	69	(51.1)	33	(24.4)	33	(24.4)

Table 11.1 The distribution of students between A-level subjects in terms of academic ability

In contrast the superior academic attainments of many science and language students may well have allowed them to select more traditional complementary groupings of subjects for study at A level. Indeed, in some instances specialisation at O level may have left them with little choice but further specialisation at A level, in order to meet the demands of university entrance requirements. This was the central theme of Reid's book, ***The Universities and the Sixth Form Curriculum***, in 1972. The point has been reiterated several times as successive attempts have been made to reform the sixth form curriculum (see Section 4.4), including most recently the Higginson Report (DES, 1988a):

> *"Students taking three A levels - the most common pattern in schools - are on a relatively narrow course of study...Three subjects are insufficient.*
>
> *The introduction of AS levels is therefore welcome...The move from three subjects to four is useful, but an extension to five subjects would be an important improvement".* (DES, 1988a)

The limitation of choice to just three subjects encourages specialisation and may, in part, explain the relatively large proportions of students of physics and chemistry (65.2% and 62.6% respectively) who felt that the compatibility of subjects had "a lot" of influence on their choice of these subjects. Physics and/or chemistry are essential to so many careers in science that it is perhaps not surprising that many students view their choice of these subjects in this way. Certainly previous research by Robinson and Goodall (1975) showed that chemistry was widely used as a 'service subject' to support a main area

of interest elsewhere. The results of this study provide support for this line of reasoning, the data in Table 8.1 show that approximately fifty per cent of students who had chosen the sciences or mathematics were strongly influenced by the career value of these subjects. In the three sciences similar proportions of students indicated that they had been strongly influenced by their need of these subjects for HE. In all other subjects, with the exception of German, the perceived career value of a subject and its necessity for HE were much less influential on choice.

The above findings accord well with those of Backhouse et al (1982) whose study was confined to just five A level subjects. In the study by Backhouse, physics and mathematics students were most concerned with the usefulness of subjects for future jobs, and English literature students were least concerned. A study by Furnham (1984) has shown that, for his sample of two hundred and thirty-seven students, mathematics, English and the physical sciences were believed to be most important in getting a job. The apparent inconsistency of the results for English may perhaps be explained by a belief amongst students that the subject is very useful (Furnham, 1984), but a concurrent belief that this variable is relatively unimportant in subject choice (Backhouse et al, 1982).

From the results reported in Tables 8.1, 8.2 and 8.3 it seems that the majority of students do not regard challenge as a substantial influence on the choice of subjects. This

variable was strongly influential for only approximately one third of the students in most subjects. Only three subjects, German, art and sociology, yielded more than forty per cent agreement with this view.

The variable concerned with the perceived usefulness of subjects for life in general produced a much greater diversity of responses, with sociology providing the largest proportion of students (48.2%) who felt that they had been strongly influenced by this variable. Approximately forty per cent of students who had chosen economics or French were also strongly influenced by the variable "useful for life in general".

The fact that both the social sciences (sociology and economics) yielded similar results for this variable, and others, would seem to be significant. The perceived relative importance of these subjects for life in general (and their perceived relative unimportance for career or HE) may perhaps indicate a genuine desire amongst these students to increase their awareness and understanding of their position in an economic society. Certainly Potts (1984) attributed the growing popularity of economics to "*a desire to be economically literate and comprehend the main economic issues and policies of the day*". However, it must also be borne in mind that the majority of students who had chosen sociology and economics had fairly modest levels of academic attainment (Table 11.1) in terms of O level passes, and hence probably had little choice of subjects

for study at A level. Thus the perceived importance of this variable may, in some instances, simply be an expression of justification of their choice (see later discussion of dissonance).

The perceived value of French for life in general is possibly more easily explained. The growth of foreign travel, particularly the package tour, has probably increased awareness of the usefulness of a knowledge of foreign languages. The perceived usefulness of French in particular is possibly a consequence of its predominance over other languages in English education for historical, geographical and traditional reasons. More recently, for the more astute student, the perceived usefulness of languages has been enhanced by the prospect of free trade in 1992 and, for French in particular, by the building of the Channel tunnel.

The only other variable to have strongly influenced substantial proportions of students, in some subject areas, was the statement "I thought this subject would be well taught". In many subjects approximately one third of the students felt that this variable had influenced them a lot. It is interesting to note that the results for German were noticeably different from those for other subjects, with almost sixty per cent of students indicating that this variable had strongly influenced their choice of German. One possible explanation of this finding is much greater confidence amongst students in the quality of teaching of

this subject, possibly because the majority of students of German were in the sixth forms of schools, and hence probably knew in advance which teacher they would be having for A level work.

In contrast, economics and sociology attracted the smallest proportions of such responses. Although this might be indicative of a lower level of confidence in the teaching of social sciences, it seems more likely that, at this stage, the majority of students were simply acknowledging that they had little, if any, experience of these subjects on which to base their views, as sociology and economics were not widely available in the schools. Such reasoning cannot, however, be applied to the relatively small proportions of students who felt that this variable had influenced their choice of the physical sciences and mathematics. Some of the issues surrounding teacher quality in social sciences, physical sciences and mathematics are discussed in Section 11.2.

The other variables investigated in this project seem to be of relatively minor importance in subject choice. From the results shown in Tables 8.2 and 8.3 it is apparent that other people are perceived to have generally little influence on students' choice of subjects for study. This finding is very much in line with that of McNair (1970) (Section 5.5). A more recent study by Backhouse et al (1982) showed that approximately a third or more of students indicated that parents and subject teachers had

been influential. However, the results of this study suggest that the degree of influence of parents and subject teachers , where it exists at all, is probably only slight (Table 8.2). In most subjects, less than twenty per cent of the students felt that these variables had influenced them a lot (Table 8.1). In almost all subjects the advice of careers teachers was even less influential than that of subject teachers (Tables 8.1 and 8.2).

The results of this study confirm the view (Backhouse et al 1982) that friends are least influential, not only in terms of the advice they offer, but also with regard to choice of subject in order to retain proximity to a friend. The advice of older students influenced a slightly larger proportion of students, but once again it was negligible for the majority of students in most subjects (Table 8.3).

The only other variable to be investigated in this project was concerned with choice based upon the perceived easiness of a subject in relation to others. This variable had a lot of influence on less than ten per cent of the students in almost all subject areas. The only exception being art where more than fifteen per cent of the students expressed such a view. Physics attracted the smallest proportion (4.1%) of such responses (Table 8.1). The perceived easiness of some subjects in relation to others has been reported by several researchers, for example, Ormerod and Duckworth (1975) and Backhouse et al (1982). However, the results of this study suggest that such

perceptions generally have little or no influence on choice of subjects for study at A level.

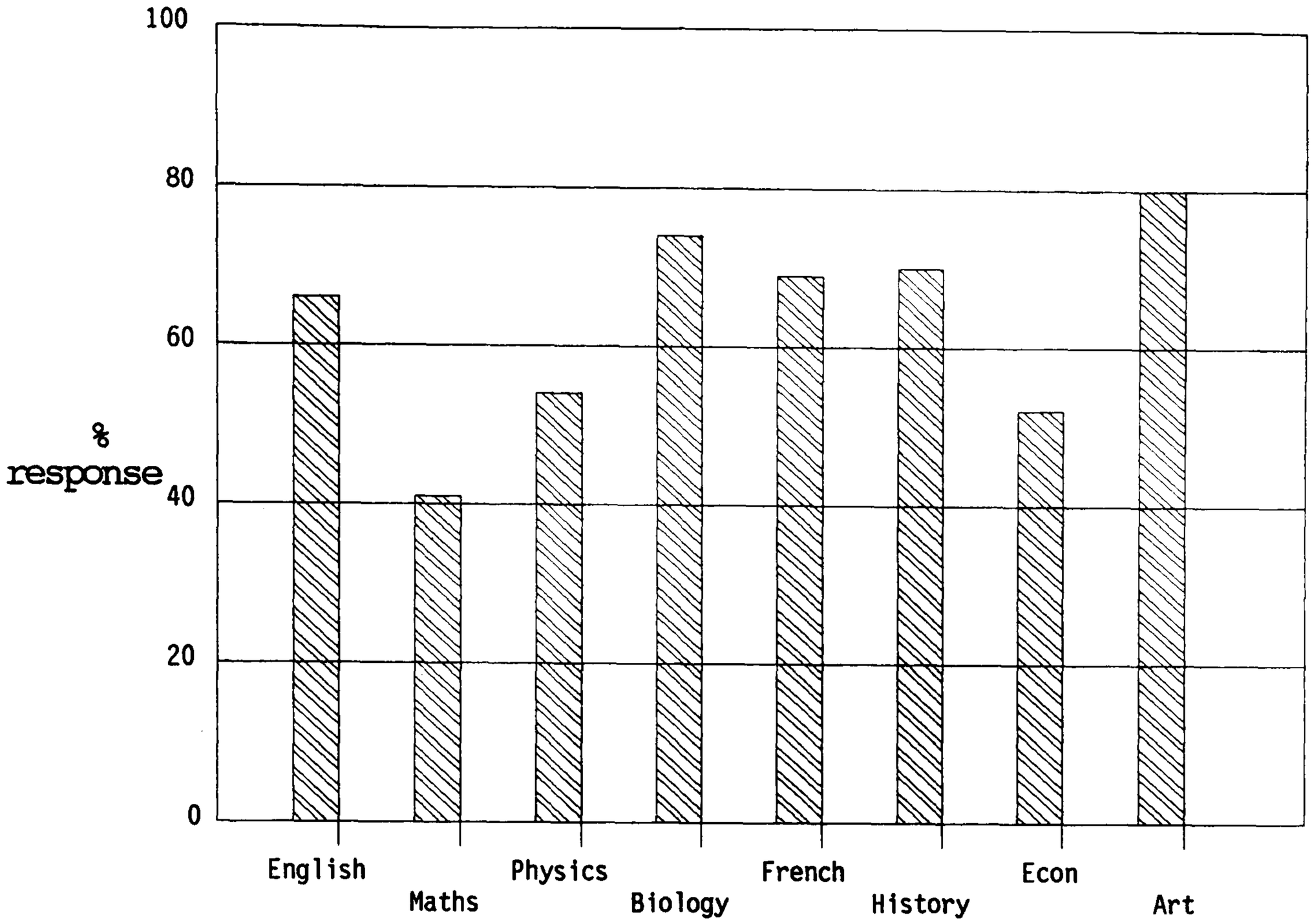
From the discussion thus far it is apparent that, for most subjects, the most influential variables are the interest value of the subject and previous success in that subject. Other important variables, for many students, are compatibility of the subject with other subjects, and, probably allied to this, the need for certain subjects for career or HE. Of lesser importance were the perceived usefulness of the subject for life in general, the belief that the subject would be well taught and the view that the subject would provide a challenge.

Notwithstanding the above generalisations, the results shown in Tables 8.1, 8.2 and 8.3 show that there is considerable variation between subjects in terms of some of the variables investigated. This is visually clear when the data is studied in graphical form as shown in Figure 11.1. In general terms it seems that choice of mathematics, the physical sciences and social sciences was less influenced by perceived interest value than arts subjects, modern languages and biology (Figure 11.1a). In contrast the variable relating to previous success produced a much more uniform set of responses, the most notable exception being economics which was not widely available in the schools (Figure 11.1b). Graphical representation of the results for the compatibility variable shows that this variable was more important to students of mathematics and

physics than to those choosing other subjects (Figure 11.1c). The career value of subjects and their necessity for HE were similarly more important to those choosing the sciences and mathematics (Figure 11.1d and 11.1e). In contrast the perceived usefulness of subjects for life in general was more important for students choosing English literature, mathematics, French and social sciences (Figure 11.1f).

Analysis of the data in terms of academic ability, type of institution attended and gender, using Chi-square, revealed a number of significant differences for the variables investigated (Sections 8.3-8.5). However, many significant differences were related to specific subjects, and hence are perhaps only of academic interest to those concerned with particular subjects. This discussion is confined to the general trends that seem to emerge from this analysis.

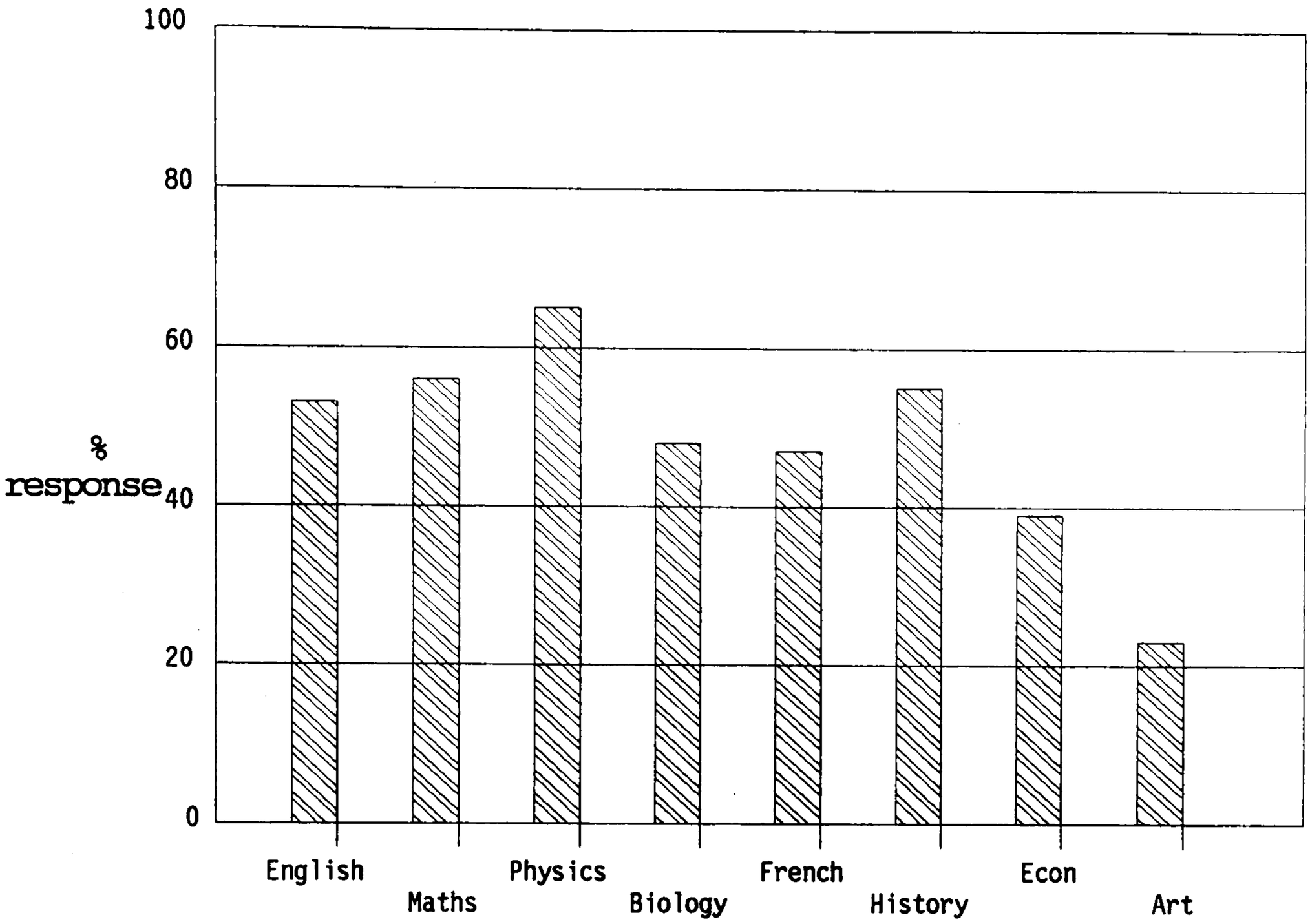
a) Variable - Thought this subject would be interesting



b)Variable - Successful in this subject at O level/CSE

Figure 11.1 The variation between subjects for some of the variables investigated - student response "A lot" of influence

c) Variable - Thought this subject would go well with other subjects



d) Variable - Subject needed for career

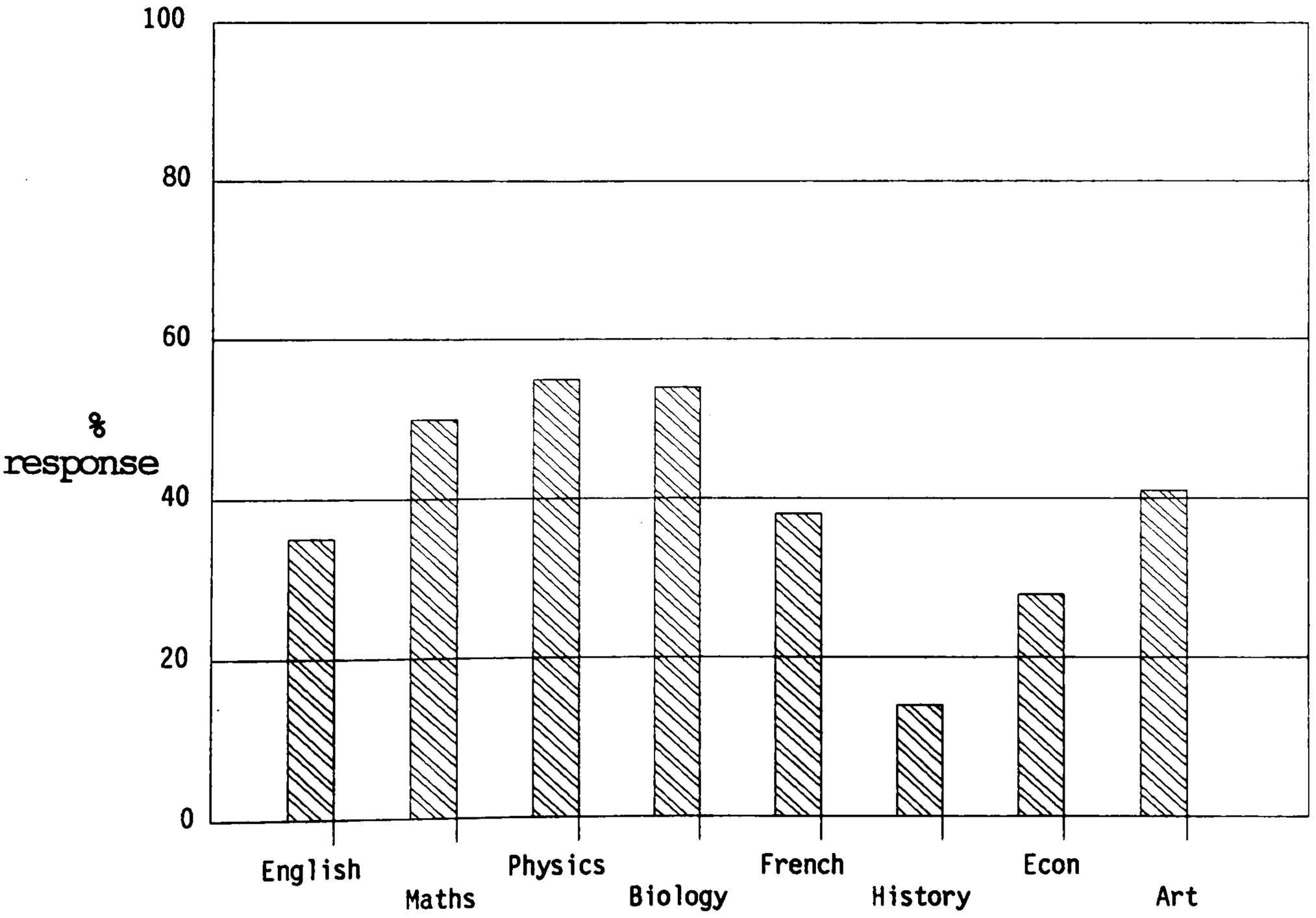
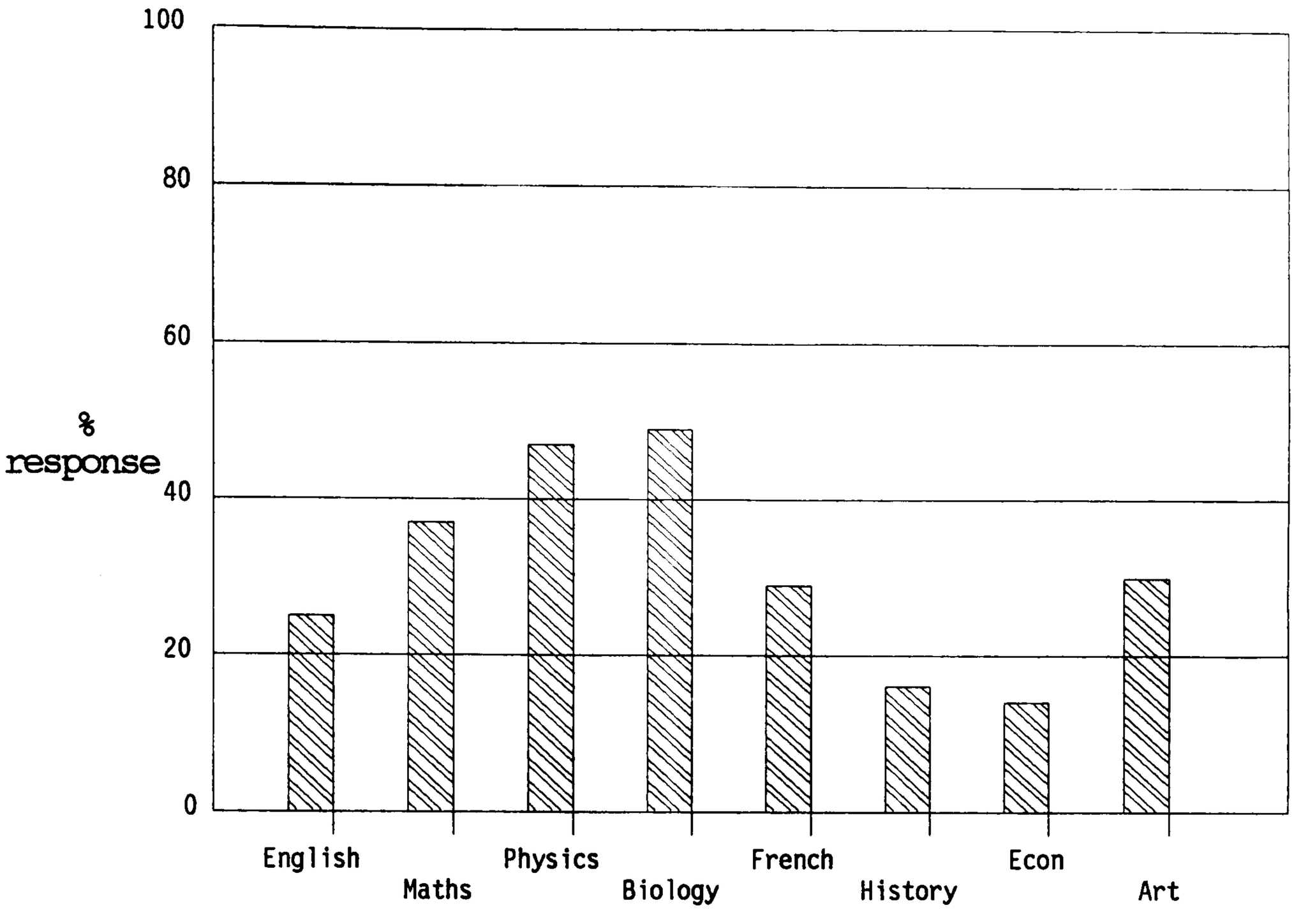


Figure 11.1 (continued) The variation between subjects for some of the variables investigated - student response "A lot" of influence

e) Variable - Subject needed for HE



f) Variable - Subject useful for life in general

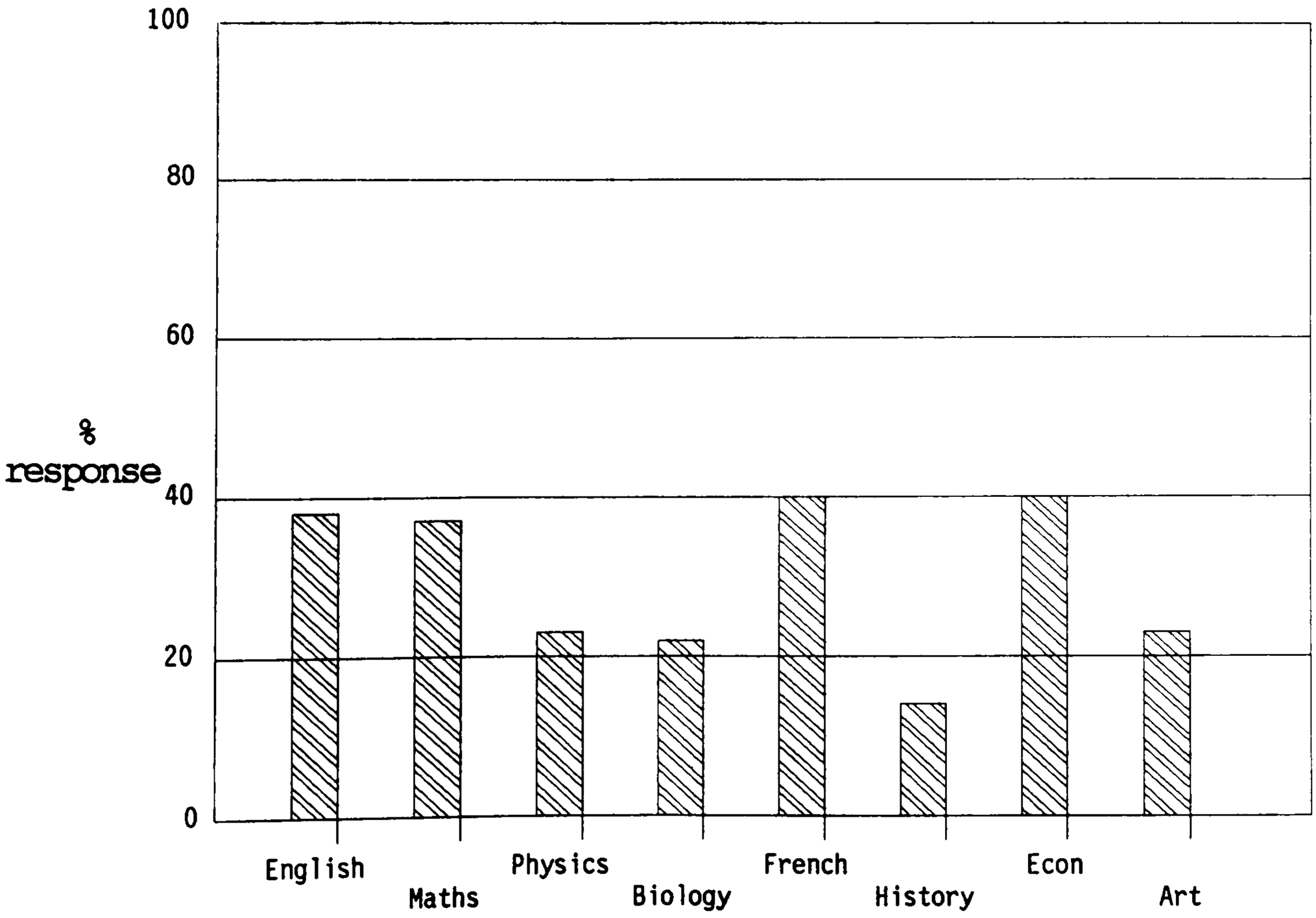


Figure 11.1 (continued) The variation between subjects for some of the variables investigated - student response "A lot" of influence

Although, as previously mentioned, the advice of other people was generally stated to be lacking in influence, it does seem that in some subjects students of lower ability were more likely to feel that their choice of subjects had been influenced by the advice of parents and friends, and less likely to feel that their subject teacher had been influential. The inference here being that, when choosing subjects, lower ability students get and/or seek more support from family and friends than from teachers. In some instances it is possible that teachers may try to dissuade a less able student from choosing a subjects which they believe is beyond his/her capability. If the student is determined to pursue their choice, it is perhaps not surprising that they might recourse to family and friends for support.

Analysis in terms of type of institution attended revealed no trends except, as might be expected, the more widespread influence amongst school students of the belief that the subject would be well taught. This belief is probably a reflection of the continuity of teaching that is found in schools where the majority of sixth form students are the product of the school itself. It is interesting to note that this variable had a substantial influence on approximately a third of the students in many subject areas. The relative importance of this variable, and the significant difference between schools and colleges, perhaps highlights a need for closer liaison between schools and colleges so that school students could perhaps

have more contact with the teachers who will be teaching them at A level.

The analyses in terms of gender revealed a number of significant differences in terms of the variables investigated. However, most of these related to specific subjects and only one interesting trend was discernible across several different subjects. Although the variable itself was generally perceived to be lacking in influence, boys were more likely than girls to be influenced by having a friend doing the same subject. This was true for students of English literature (Table 8.29), mathematics (Table 8.32), physics (Table 8.35), geography (Table 8.42), history (Table 8.44) and economics (Table 8.49). Although such findings have not, as far as is known to the author, been reported elsewhere, it is possible that an explanation may be sought from developmental psychology. Tanner (1961) refers to differences between boys and girls in terms of their rate of emotional development, which in turn is related to physical maturation, with girls reaching adolescence and their final mature size approximately two years before boys (Tanner, 1961; Tanner, 1962). This difference may, at the time of A level subject choice, manifest itself as a need to sustain the security of friendships within the teaching group.

In summary it may be said that although a large number of significant differences were found in terms of the parameters of academic ability, institution type and

gender, very few patterns were discernible across the subjects investigated. This may suggest that students employ a wide variety of strategies when selecting subjects for study at A level. The diversity of strategies between subjects is evident from the graphs shown in Figure 11.1. Such findings emphasise the difficulties inherent in trying to propose a single generalised model to explain subject choice at A level.

Examination of the variables investigated in this project reveals that most, if not all, include elements of probability and utility (see page 93). For example, the advice of people such as careers teachers, subject teachers, parents, older students or peers may include references to the perceived potential advantages of studying particular subjects at A level. Exposure to advice, coupled in most instances with personal previous experience of a subject, may lead to the development of a set of beliefs about what a subject is like at A level. These perceptions may be very important in the decision-making process, for instance, as shown in this study, the belief that a subject would be interesting. However, in the absence of concrete personal experience of A level work, such beliefs may be largely subjective and hence may lead to unrealistic expectations of the subjects chosen. The resulting dissatisfaction may lead to rejection of the subject(s) concerned or even rejection of A levels altogether. The dissatisfaction of the students in this study is discussed in Section 11.2.

Some of the variables investigated in this project are patently not subjective. For example, a student may know that a particular subject, or group of subjects is necessary for entry to a particular career or course in HE. However, what might be more subjective is the student's assessment of his/her ability to attain the necessary grades in the required subjects. Whilst performance in a subject examination taken at 16+ may provide an relatively objective assessment of ability in that subject, at that level, the grade attained is usually not available until after the student has made his/her preliminary choice of subjects for study at A level. In the meantime the student has to make an assessment of his/her ability in each of the subjects being considered, and weigh each of these as a performance indicator for future success at A level.

In essence the student has to assess his/her subjective probabilities that each subject being considered would lead to various desired outcomes, and the value he/she attaches to each outcome. The results of this study suggest that for the majority of students in most subjects such desired outcomes include an interesting course, academic success, a compatible group of subjects, the usefulness of subjects for future career and/or HE, and the usefulness of the subject for life in general. However, the value that students attach to such outcomes seems to be variable between different subjects (Figure 11.1) and probably between different students. One person's perception of a situation may differ substantially from that of another

simply because of differences in their background experience. Hence the individual must make his/her own assessment of the value attached to desired outcomes, for each subject being considered, and, as suggested in the model of career choice described by Mitchell and Beach (1976) (see Section 5.7) choose those subjects with the maximum subjective expected utility (SEU).

For some students choice of subjects for study may be relatively straightforward because they have clear career objectives in mind and/or a long-standing interest in a narrow range of subjects. For other students , with less specific objectives or interests, appropriate choices may be less obvious, so their decision making process may be more protracted as they set about identifying alternatives and discovering potential consequences, prior to finalising choice. The results of this study show that in some instances the decision making process leads to an unsatisfactory outcome. Almost eight per cent of the students made changes to their A level programme in the first two terms of the A level course (Section 9.2), and twenty-four per cent of continuing students regretted choosing at least one of the subjects they were studying (Section 9.3). In many instances such dissatisfaction was a consequence of academic problems (Section 11.2), suggesting perhaps that these students had initially over-estimated their ability to cope with the standard required in particular subjects at A level. Alternatively, they may have been aware of the possibility that they might struggle

academically, but on weighing this possibility against the need for a particular subject, for example for HE, they might have initially felt that this was an acceptable risk. The relatively high level of dissatisfaction apparent amongst students in this study suggests that, in the context of A level choice, the degree of subjectivity for some variables is such that some students cannot make an adequate assessment of expected utility.

Even when students have arrived at the SEU for each of the subjects they are considering, it seems likely that for some students the final choice may involve a good deal of compromise. Most institutions restrict students to choosing just three or perhaps four subjects for study at A level; and students with a limited pattern of success at 16+ may be advised to restrict themselves to two subjects. The traditional restriction of subjects at this level was referred to in the Higginson Report (DES, 1988a) in terms of the "*uncomfortable choices*" that many students have to make when selecting subjects for study. According to Gottfredson (1981), when occupational choice is being considered, the circumscription of acceptable alternatives follows a particular pattern (Section 5.7). In essence this involves foregoing, in the following order, psychological characteristics, prestige and finally sex-type.

The results of this study show that over twenty-seven per cent of the original cohort felt that their choice of subjects had been restricted in some way, the main reasons being timetable restrictions and the lack of availability of specific subjects at particular institutions (Section 8.6). Although the compromise strategies were not specifically examined, the extent of compromise evident in this study suggests that this aspect of subject choice is worthy of further research.

Following the reasoning of Mitchell and Beach (1976), preferences for particular subjects need not necessarily be synonymous with the choice that is actually made. This is amply illustrated by an example recently encountered by the author: a student stated her preferences for A levels in chemistry, biology and French, but because of external influences, in the form of university entrance requirements for medical school, the student was advised to abandon French and select either physics or mathematics to complement chemistry and biology at A level.

Another recent example in the author's experience shows clearly the discrepancy that may exist between choice and attainment: one student chose science subjects for study at A level because he had a long-standing interest in animals and aspired to become a veterinary surgeon. On receiving poor/mediocre results in the sciences at GCSE, rather than follow a lower status career as a veterinary assistant or stable-hand etc., the student elected to

compromise his interests and chose other A levels which would enable him to enter an alternative highly prestigious profession.

The above scenarios, plus others very similar, have been encountered on several occasions during the teaching career of the author and are illustrative of Gottfredson's formulation of compromise (Gottfredson, 1981), namely that some students are willing to compromise long-standing interests rather than forego prestige. However, most secondary school teachers have probably encountered students who are unwilling to compromise their interests, and insist on following a particular course, even though this is against the advice of their subject teacher. Indeed it seems likely that some such students are amongst those in this study who expressed dissatisfaction with their chosen subjects because of difficulty in coping academically (Section 9.4). The existence of such students would confirm the view of Pryor (1987) that Gottfredson's theory requires elaboration to encompass refusal to compromise. Further modifications may also be necessary to allow for some of the other parameters investigated in this study, for instance, gender differences and differences in terms of academic ability and subject specialisation. The level of dissatisfaction evident amongst students in this study (Sections 9.2 and 9.3) demonstrates the need for further research into the area of compromise and its relationship with subject choice and student satisfaction at A level. As Wheeler and Janis (1980) point out, most

good forward planning includes contingency planning. A greater understanding of compromise strategies could well be useful to teachers in helping students to choose subjects for study at A level.

As a result of the decision-making process, either with or without the need for compromise, the student commits himself/herself to a small number of subjects for study at A level. However, as Kiesler (1971) points out, commitment is a continuous variable, so some students may be more strongly committed than others. In terms of A level choice, when a student actually commences a particular course of study the act of choice becomes explicit. According to Kiesler this "explicitness" may increase the degree of commitment. However, a number of other variables are also important in this context (Section 5.7). For instance, the degree of volition perceived by the student in making his/her choice. The results of this study show that for over a quarter of the students the process of choice was perceived to be restricted in some way (Section 8.6), suggesting that these students did not view their choice of subjects as being entirely of their own volition.

Kiesler (1971) also suggests that the degree of commitment may be increased by the number of acts performed, assuming that they are additive in some way. In the context of subject choice it is possible that choosing subjects which are felt to be compatible is, in effect, an additive situation. The results of this study show that

students who were less successful in examinations at 16+ were significantly more likely to abandon A level subjects than those of higher academic ability (Table 9.1). As students with fewer O levels studied significantly fewer subjects at A level (Table 7.8), it may follow that they feel less strength of commitment to their chosen subjects. In contrast, following the reasoning of Kiesler (1971), the more academic student, studying three or four subjects, may feel greater strength of commitment due to the additive effect of choices which are felt to be compatible.

Whatever the degree of commitment, Festinger (1957) suggests that all choices result in dissonance. In the context of subject choice this means that the chosen subjects have certain negative features and some of the rejected subjects have features that make them attractive. Because dissonance is "psychologically uncomfortable" a person will seek to reduce dissonance and achieve consonance. In the context of subject choice it is possible that this may take the form of affirmation of selection of the chosen subjects by seeking evidence to confirm the decision, for example emphasising the best features of the chosen subjects and the worst features of those that were rejected. By adjusting his/her evaluation of subjects in this way the student may gradually become more comfortable with his/her chosen courses.

Although this study provides no direct evidence to support the above hypothetical scenario, it does provide

evidence to suggest that some students are unable to achieve consonance in this way. For almost eight per cent of the students, it seems that dissonance was reduced by revoking their choice of one or more of subjects. It seems likely that for some of these students such change caused a certain amount of tension. The original choice was, after all, a public action or behavioural commitment. Thus, as Kiesler (1971) points out, change must involve not only a new opinion but also some change in the self-concept. The individual must somehow explain his/her behaviour, if only to himself/herself. Many such explanations are largely demeaning to self (Kiesler, 1971). In the context of subject choice such explanations may include inability to cope, making a mistake, acting without forethought etc.. The self-denigrating nature of change in this context may partly account for the relatively large proportion (24%) of students who regretted their choice of subjects but had not actually made the public action of initiating change (Section 9.3). With this in mind it seems that a change in attitude might be beneficial, so that all concerned, including students, teachers and parents, become more accepting of change, early in the course, as a natural part of effective subject choice.

11.2 Student dissatisfaction with A-level courses

This Section is concerned with the results reported in Chapter Nine. From Table 9.1 it seems that rejection of subjects is inversely related to academic ability. This suggests that for many students discontent with a subject at A level is simply a result of finding it too difficult. This hypothesis is supported by the finding that 39% of all the reasons given for dropping subjects made reference to the difficulty of the subjects abandoned (Table 9.11).

However, whether this reasoning applies equally in all subject areas is, thus far, largely a matter for conjecture. Certainly there is a growing consensus of opinion that some subjects are seen as difficult in relation to others. For example, there is a wealth of evidence to support the view that the physical sciences and foreign languages are the most difficult at O level (Forrest, 1971; Forrest and Smith, 1972, Nuttall et al, 1974). A similar picture emerges for the physical sciences at A level in several studies surveyed by Ormerod and Duckworth (1975). A more recent investigation, by Backhouse et al (1982) (see Section 5.5), suggests that English literature seems to be regarded as fairly easy, whereas mathematics and physics appear to be considered hard. The results shown in Tables 9.11 and 9.12 suggest that subject difficulty is a major cause of dissatisfaction amongst mathematics, physics, chemistry and language students.

Lawrenz (1976) claims that this extra difficulty may account for the more pronounced loss of interest in physical sciences than biological sciences among American high school students. He suggests that this loss of interest could perhaps be abated by presenting physical science material in such a way that students would find it easier and, therefore, less threatening; this being best achieved by placing less emphasis on mathematics. Pell (1985) shares this view, suggesting that subject difficulty in A level physics is related to an over-mathematical approach. Whilst he acknowledges that the subject demands a certain level of mathematical expertise, Pell points out that an overemphasis is unlikely to make physics easier for most sixth formers.

Many researchers have advanced reasons to explain the difficulties encountered by some people when learning mathematics. Some writers have emphasised the importance of personality, for example, Hudson (1966), in his theory of convergence/divergence, described divergers as being unable to accept rules of procedure and hence he (she) mentally "takes flight" from science and mathematics when processes are not fully understood. Other researchers have explored cognitive factors to explain mathematical learning difficulties and have discussed the relative merits of algorithmic methods of teaching versus approaches based on understanding of mathematical processes (Skemp, 1976; Mellin-Olsen, 1981). In a small, but recent, study in this sphere Quilter and Harper (1988) suggest that although

most research focuses *"principally upon the cognitive/ conceptual/intellectual area in diagnosing pupil difficulties, the learners themselves stress the importance of the learning environment and its influence upon motivation"*. Almost one in four of the study population believed that their relative failure in mathematics was due to the lack of relevance of the subject and/or to the teaching to which they were exposed.

In this study, although a few students made reference to poor teaching of mathematics as a reason for their discontent (Appendix five), the majority of dissatisfied mathematics students cited the difficulty of the subject as the major cause of their disaffection (Tables 9.11 and 9.12).

Apart from the difficulty of mathematics as a subject *per se*, this study provides evidence that problems with mathematics are also a dimension of the difficulties experienced by some students of physical sciences:

"Maths too difficult"
(ex-physics student)

"Find difficult to do without maths"
(continuing physics student)

"Boring and all maths"
(continuing chemistry student)

As the majority of students who expressed difficulty did so in more general terms, it is not possible to quantify the full extent of the mathematical difficulties for this sample of physical science students.

It is interesting to note that chemistry is not rejected to the same extent as mathematics and physics (Table 9.3). Although this may be because of intrinsic differences in the nature of the subjects, for example, perhaps a lesser mathematical component, it is possible that many students feel a greater need to persevere with chemistry for career purposes. This subject is instrumental to so many careers in science that students may be unwilling to abandon it, despite academic problems or other causes of dissatisfaction. Certainly previous research (Robinson and Goodall, 1975) has shown that chemistry A level is frequently used as a "service subject" for courses in medicine, biology, biochemistry and geology. Thus many students may feel unable to give up chemistry, at least not without radically re-thinking their career plans. This hypothesis is, to some extent, supported by the finding that almost 10% of the continuing chemistry students would not choose this subject if they had their time again. Presumably many of these students would completely re-structure their career intentions, excluding those careers which required chemistry at A level.

Discontent arising from difficulties imposed by a mathematical component need not necessarily be confined to mathematics, physics and chemistry. Students with poor mathematical skills, or lacking confidence in their numerical ability, may well feel out of their depth in any subject where data analysis plays a significant part and mathematical expressions are common. This line of

reasoning may, in part, account for the unsatisfactory situation in economics where there was a relatively high drop-out rate and almost 16% of continuing students would not choose the subject if they had their time again. Of these dissatisfied students almost a third (Table 9.12) cited difficulty as a reason for their discontent.

However, the increasing use of data response material in economics has received considerable support (Wilkinson, 1980; Livesey, 1986), with some protagonists calling for further moves in this direction (Jackson, 1980; Culyer, 1985). In view of the dissatisfaction apparent amongst many economics students in this study, it would seem judicious for examination boards to carefully assess the impact of such development for the students concerned before embarking upon further change.

A substantial mathematical component is not the only possible source of difficulty in the subjects discussed so far. Several studies have shown language and terminology to be major stumbling blocks in science. As early as 1961, Pheasant reported the "plethora of technical terms in biology" as an obstacle to understanding. In addition to the excess of terminology, Gardner (1974b) identifies a large number (599) of non-technical words frequently used and having special naunces in science teaching. He suggests that many students, even at quite advanced levels in secondary education, have difficulty with the correct scientific implications of certain words. At university

level it has been shown that the vocabulary of science/technology students is frequently inferior to that of their arts/social science counterparts, even though the vocabulary test used included a fair proportion of words from scientific journals (Kirkman, 1967).

Although no science students in this study made specific reference to vocabulary problems, the frustration evident in some of their reasons suggests that such problems may well be implicated in their discontent:

"I did not understand a word of it"
(Ex-physics student)

"Could not cope, difficulty in understanding"
(Ex-chemistry student)

"My understanding of the subject is minimal"
(Continuing chemistry student)

The problems of unfamiliar vocabulary and language are most acute in the study of foreign languages, and may well account for some of the discontent apparent amongst some students in this study. As Williams (1976) points out,

> *"it is all too easy for a reasonably intelligent person to monitor his own progress in learning a language and even without justification to be disappointed by his observations".* (Williams, 1976)

Such continuous exposure to failure may prove to be too much for weaker students and hence result in their rejection of the subject.

Even for those who persevere, it seems that substantial proportions of students have severe misgivings about taking these subjects - in this study over eleven per cent of

students studying French and more than ten per cent of those studying German would not have chosen these subjects if they had their time again. Of these, more than half (50 and 60 % respectively) cited difficulty as a reason, with several students making reference to the difference between O and A level work:

"Jump from O to A very big ....."
(Ex "French" student)

"I find it too hard"
(Continuing "German" student)

"The jump is too great between O and A level"
(Continuing "French" student)

"Large gap between O and A level work"
(Continuing "French" student)

"Very different from O level - very hard and not what I expected"
(Continuing "French" student)

It is possible that this disillusionment is a consequence of a change of emphasis at A level, particularly the move away from the receptive skills of aural comprehension and reading, towards the productive skills of speech and writing.

It is interesting to note that in this study dissatisfaction with French, in terms of drop-out rate and retrospective choice, was marginally greater than dissatisfaction with German. It is possible that this may be a consequence of differences in students' perceptions of their own level of success. As Savory (1957) points out,

> *"it is easier to write German more or less as a German would write it than it is to write French like a Frenchman"*
> (Savory, 1957)

More recently a study by James (1979) has estimated the 'language distance' between English and French as being marginally greater than the 'language distance' between English and German. Although slight, such differences may account for the greater dissatisfaction with French than German apparent in this study. A more detailed study of students studying these languages would be necessary to investigate this hypothesis.

Any consideration of subject difficulty must be accompanied by examination of the differential distribution of students in terms of academic ability between the subjects concerned. In this study students were categorised in terms of success at O level or equivalent at the beginning of A level study; the lowest ability group having five or less passes, the middle group six or seven, and the highest ability group eight or more. This categorisation yielded three groups of approximately equal size, their distribution between A level subjects studied is shown in Table 11.1.

It is apparent that the sciences and foreign languages attracted substantial majorities of very able students. In most other subjects the more able students formed smaller majorities, the only exceptions being sociology and art where the majority of students belonged to the less able group, as judged in terms of the number of O level passes.

When O level grades are considered for each of the A level subjects investigated a similar trend emerges, with the majority of students of mathematics, physics, French and German having attained a grade A at O level (Table 11.2). In English literature and art the majority of the students had attained only grade C at O level, and approximately ten per cent in each of these groups had less than grade C.

	Grade obtained at O level/CSE			
	A	B	C	< C
	N (%)	N (%)	N (%)	N (%)
English lit	114(22.1)	166(32.2)	182(35.3)	48(9.3)
Mathematics	249(41.2)	222(36.8)	125(20.7)	7(1.2)
Physics	151(37.8)	142(35.6)	96(24.1)	8(2.0)
Chemistry	149(38.1)	163(41.7)	69(17.7)	8(2.1)
Biology	75(27.4)	106(38.7)	79(28.8)	10(3.7)
French	72(42.6)	59(34.9)	35(20.7)	2(1.2)
German	24(38.1)	23(36.5)	13(20.6)	2(3.2)
Geography	60(23.1)	97(37.3)	87(33.5)	8(3.1)
History	89(28.3)	113(35.9)	74(23.5)	18(5.7)
Economics	NA	NA	NA	NA
Sociology	NA	NA	NA	NA
Art	31(21.1)	42(28.6)	44(29.9)	15(10.2)

Table 11.2 Grades obtained at O level/ CSE by students studying each subject at A level

N.B. in each subject a small number of students did not indicate what grade they had obtained - hence percentages do not add up to one hundred. No grades were recorded for economics or sociology as these subjects were not widely available in the schools.

Despite the generally lower level of academic attainment it is interesting to note that the art group as a whole was the most stable group in this study, with no students dropping the subject during the first year. At first sight this would seem to suggest that these students were content with the art education they were receiving, had a healthy perspective of the subject and, probably most important,

felt that they were making progress in this field. However, it is possible that, because of the more subjective nature of the evaluation of their progress, students of art are less exposed to the threat of failure early in their course than students in many other subject areas. Art work, although subject to criticism, would seem to differ from many other disciplines in that there is no obvious absolute scale of quality. Thus a piece of work, although judged to be poor, may still, in its own right, bring some satisfaction to the student who produced it, if only through the processes involved in its creation. In contrast, there would appear to be little consolation for the physics student who has laboured over several pages of calculations, all of which are wrong!

The inferior academic attainment of many sociology students may well, in part, explain the higher drop-out rate (4.00%) in this subject in comparison to others, and also the relatively large proportion of remaining students (10.83%) who were dissatisfied. The distribution of academic ability suggests that sociology is, to some extent, being used by schools and colleges as a 'sink' subject for students who do not have sufficient O levels to permit a real choice at A level. The imprudence of such a policy is exacerbated by the fact that, like economics, sociology is for many students a 'new' subject in the sense that they embark upon A level studies without prior experience at O level. Thus students may find themselves studying a subject of which they have unrealistic

expectations and for which, in some cases, they are inadequately prepared.

On this latter premise Reqan (1986) argues vehemently against the provision of sociology in schools, claiming that to teach this subject as an academic subject at this level is "*intellectually dubious, if not pernicious*". One of the most important features of Reqan's argument is that sociology is a synthesizing subject and, as such, can only be taught **after** other subjects on which it depends - history, language, literature, religion and, perhaps, economics. On this basis he concludes that the study of sociology is best confined to higher education. The only other possible beneficiaries being the **more able** sixteen or seventeen year olds who have been particularly well taught earlier during their school careers. The results shown in Table 11.1 suggest that sociology at A level fails to attract substantial numbers of these 'more able' students.

Putting aside the issue of subject difficulty and academic attainment, it seems likely that a student's decision to drop a particular subject may also be influenced by his/her perception of the prestige value of that subject in relation to others, and also its usefulness for higher education and career purposes. For example, a recent study has shown that all universities are very definite in wanting **not** to make A level economics a requirement for their courses (Wall, 1986). A similar point has been made with regard to sociology, Regan (1986)

claiming that there is no real need for the subject at this level, as no university or polytechnic sociology department insists on A level sociology as an entrance requirement. Indeed it has been suggested that some university social science departments may actually discriminate against candidates who offer social sciences at this level, preferring their undergraduates to have a more conventional background in arts subjects (Committee of Vice-Chancellors and Principals, 1985).

A number of the reasons for dissatisfaction expressed by students make reference to this perceived lack of utility of the social sciences. Although none make specific reference to university entrance, several reflect general contempt and lack of credibility:

> "It does not interest me, and I don't think it is necessary for a career in business"
> (Continuing economics student)
>
> "Boring, complicated, load of theoretical rubbish"
> (Continuing economics student)
>
> "It is based on dangerous misleading assumptions"
> (Continuing economics student)
>
> "Uninteresting and I don't really need it"
> (Continuing sociology student)
>
> "Not valuable to future career"
> (Continuing sociology student)

Throughout its long history within the school curriculum art has also suffered a lack of prestige in relation to other subjects; a position much resented by art theorists campaigning to make art education more intellectually acceptable (Jones and Runyan, 1986; Lund, 1986; Hausman,

1987). However, despite the lowly academic status of art amongst other subjects in many schools and colleges, at least those wishing to pursue art beyond A level can perhaps feel assured of the worth of the subject in the context of their future studies or careers. For those students with other intentions the position is less promising, with most universities not accepting art for the General Entrance Requirement unless history of art is included (Committee of Vice-Chancellors and Principals, 1985). If students were not initially aware of this inequality of status, or perhaps changed their original career intentions, it seems likely that some may regret choosing art. This lack of academic acceptability may have been a contributing factor for the 7.77% of students in this study who would not, on reflection, have taken art at A level. Certainly two of the eight dissatisfied students (Table 9.9) make reference to other subjects; one preferring mathematics, the other preferring law, if they could make their choice again (Appendix five B).

In any subject area the quality of teaching may be a further cause for concern amongst students. In the mid 1980s this problem attracted considerable attention from the Government, being the sole concern of the White Paper 'Teaching Quality' (DES, 1983) and being reiterated a few years later in 'Better Schools' (DES, 1985). In October 1989 the Times Educational Supplement reported that twenty-eight per cent of teaching in 1988 was provided by staff without any qualification higher than A level in their

subject. In physics, for example, thirty-one percent of teachers had no qualification higher than A level in their subject (T.E.S., 1989b). Such staffing problems may well partially account for the relatively high level of dissatisfaction amongst physics students. However, it should be noted that although student discontent with a subject may be a direct consequence of poor teaching at A level, it may also be a corollary to inadequate preparation for A level during the fourth and fifth year. For the more fortunate, academic student such problems may be alleviated by extra private study and perhaps help from elsewhere, but for the less fortunate and/or less competent student the deficiencies of the fourth and fifth year may render the difficulties of A level insurmountable.

In this study only a relatively small proportion of students made reference to poor teaching amongst the reasons they gave for their dissatisfaction with subjects. Whilst some were severe in their criticism, others were more mild, and a few even accepted some of the responsibility for the breakdown of their relationship with certain teachers! The full range of comments is given in Appendix five, and some examples are given below:

"Too hard, too boring, teacher is useless"
(continuing mathematics student)

"Teacher no good ....."
(ex-physics student)

"Teaching isn't very good"
(continuing physics student)

"...., personality clash with teacher"
(continuing physics student)

"Form of tuition incompatible with my way of thinking"
(continuing chemistry student)

Although the physical sciences are the academic subjects most frequently cited as areas of current teacher shortage, a similar problem may extend to some other subject areas where there are insufficient students to justify the expense of a subject specialist teacher. In subjects which are generally only available at sixth form level, for instance sociology and economics, there may be only a few periods timetabled each week, particularly in small schools and those suffering from falling rolls. In this situation teachers may be called upon to teach unfamiliar subjects in order to maintain the breadth of the curriculum (Waterhouse, 1983). Although this may be acceptable where the subject is known to be a subsidiary specialism, for example a geographer with subsidiary economics, this arrangement may be stretched to uncomfortable lengths for many teachers (Waterhouse, 1983). Such a staffing policy would undoubtedly have repercussions for student satisfaction.

In this study the social sciences attracted a good deal of criticism in terms of the quality of teaching received. Whilst some students made relatively bland remarks about poor teaching, others were positively scathing:

"My teacher was exceedingly vile and generally foul tempered"
(ex-economics student)

"Unqualified teacher who taught (his/her) lefty views"
(ex-sociology student)

Whilst considering teacher quality it is important to bear in mind that good qualifications are not the only ingredients necessary to produce an effective teacher. Ramsden (1984) says that in addition to providing facts, the teacher must also communicate interest and enthusiasm if students are to perceive the subject matter as "*intrinsic*" and experience the relevance of the content for their own understanding . It seems likely that the arousal of such values is of particular importance at A level, as students move away from the more structured approach of fourth and fifth year work and learn to exercise the freedom to organise their own independent study. Without the necessary motivation, stimulated by effective teaching, the task may prove too difficult for some students and hence result in their rejection of the subject concerned.

In addition to the quality of teaching available, a student's perception of a subject will also be influenced by the content of the syllabus being followed. Whilst at the pre-A level stage the introduction of G.C.S.E. has brought extensive reappraisal of syllabuses, generally resulting in reduced content and greater emphasis on process, at A level it seems that many subjects are still firmly entrenched within the traditional mould. A survey of recent literature pertaining to the twelve subjects investigated suggests that teacher dissatisfaction with current syllabuses is not uncommon.

In sociology, for instance, Chignell and McCoy (1987) complain that A level syllabuses are becoming some of the most unimaginative on the curriculum, with examinations encouraging an appalling rote approach to learning. In this study many of the dissatisfied sociology students made reference to the boredom of lessons:

"Found it uninteresting ....."
(Ex sociology student)
"Found lessons boring....."
(Ex sociology student)
"..... all note-taking"
(Continuing sociology student)

A similar point has been made by Spicer (1987) with reference to English literature. Here it is claimed that the dominant model of classroom practice, because it is tied to a narrow examining base, mirrors university seminars in grooming students in the appreciation of "Great Works". Despite such criticism, it should be noted that the English literature students in this study were apparently more satisfied than those in almost every other subject investigated. In some schools and colleges, this may be a reflection of the superior quality of teaching received. However, across a wide range of institutions, as in this study, it seems more likely to be a consequence of the nature of the syllabuses and examinations *per se*.

In modern languages Lupson (1988) cites the "*excessive emphasis on literary register in traditional A level courses*" as one of the most compelling reasons for the decline of interest in modern languages at A level.

Although few students in this study made specific reference to the literature content of A level language syllabuses, several expressed boredom and the view that the A level course was not as they expected (Appendix five).

History is perhaps the subject that has traditionally attracted the most criticism because of the boredom generated by syllabuses geared to the memorisation of facts (Booth, 1969; Barker, 1974; Steele, 1976). Vaudry (1989) reports that "*in an attempt to rejuvenate the subject*" a new type of history teaching has been introduced - one based upon primary sources and the accompanying historical skills. The development of "skills-based" history teaching may perhaps account for Aldrich's reported improvement in the rating of history for its interest value. Sixty-one per cent of his sample of fifth year pupils indicated that they thought history was interesting, compared with approximately forty per cent of the pupils in the Schools Council Enquiry I in 1968 (Aldrich, 1987). However, by corollary, if sixty-one per cent thought the subject interesting, thirty-nine per cent either did not, or held a neutral position. Hallden (1986), in his argument for greater understanding of history in terms of its own inner consistency and logic, suggests that history at its best is:

> *"a good story about why this or that guy did so and so, or, at its worst, an incomprehensible, fragmented list of facts, which one has to learn in some way or other"*
>
> (Hallden, 1986)

In this study there is evidence to show that for some dissatisfied history students, their experience of the subject at A level falls firmly within Hallden's "worst" category:

> "Heavy workload and I'm worried that I won't be able to learn it all for the exam, and the lessons are dull"
> (Continuing history student)
>
> "Work's very dull, lessons are not interesting, no enjoyment"
> (Continuing history student)

The type of regurgitation training referred to above, although to be deplored, may be found, at least to some extent, in almost any subject area and seems to account for much of the dissatisfaction (approximately 20%) evident in this study.

Even in subjects where there have been significant revisions of syllabus content, the changes implemented may not always encourage a move away from meaningless rote learning. In the sciences, for instance, although the introduction of applied aspects has generally been well-received (Akrill et al, 1985), these changes are frequently additions, rather than replacements, to existing syllabus content. Similarly in economics Wall (1986) comments on the tremendous temptation to explain present day events at A level by teaching the traditional course content and then building onto it various modern developments. The extension of syllabuses in this way can only be accommodated by adjusting teaching and learning styles accordingly. In some instances this may be detrimental to

the depth of understanding achieved by students and hence do nothing to enhance their perception of the subject.

From the results reported in Chapter Nine it is apparent that A levels in their present form are not meeting the needs of a substantial proportion of students who embark upon full-time courses. Almost fourteen per cent of the students who started such courses left their school or college prior to completing the course.

Of the students who remained beyond the first two terms, over five per cent would not have chosen to study A levels if they had their time again. Amongst these continuing students there was evidence that the mechanism of subject choice was inadequate for many students. Almost eight per cent had dropped at least one subject, and twenty-four per cent would not choose the same subjects if they had their time again. This dissatisfaction was more pronounced amongst students of lower academic ability, as judged in terms of success in examinations at 16+.

From a subjective analysis of the reasons given by students for their discontent, it seems that academic problems were a major factor, with lack of enjoyment also being important.

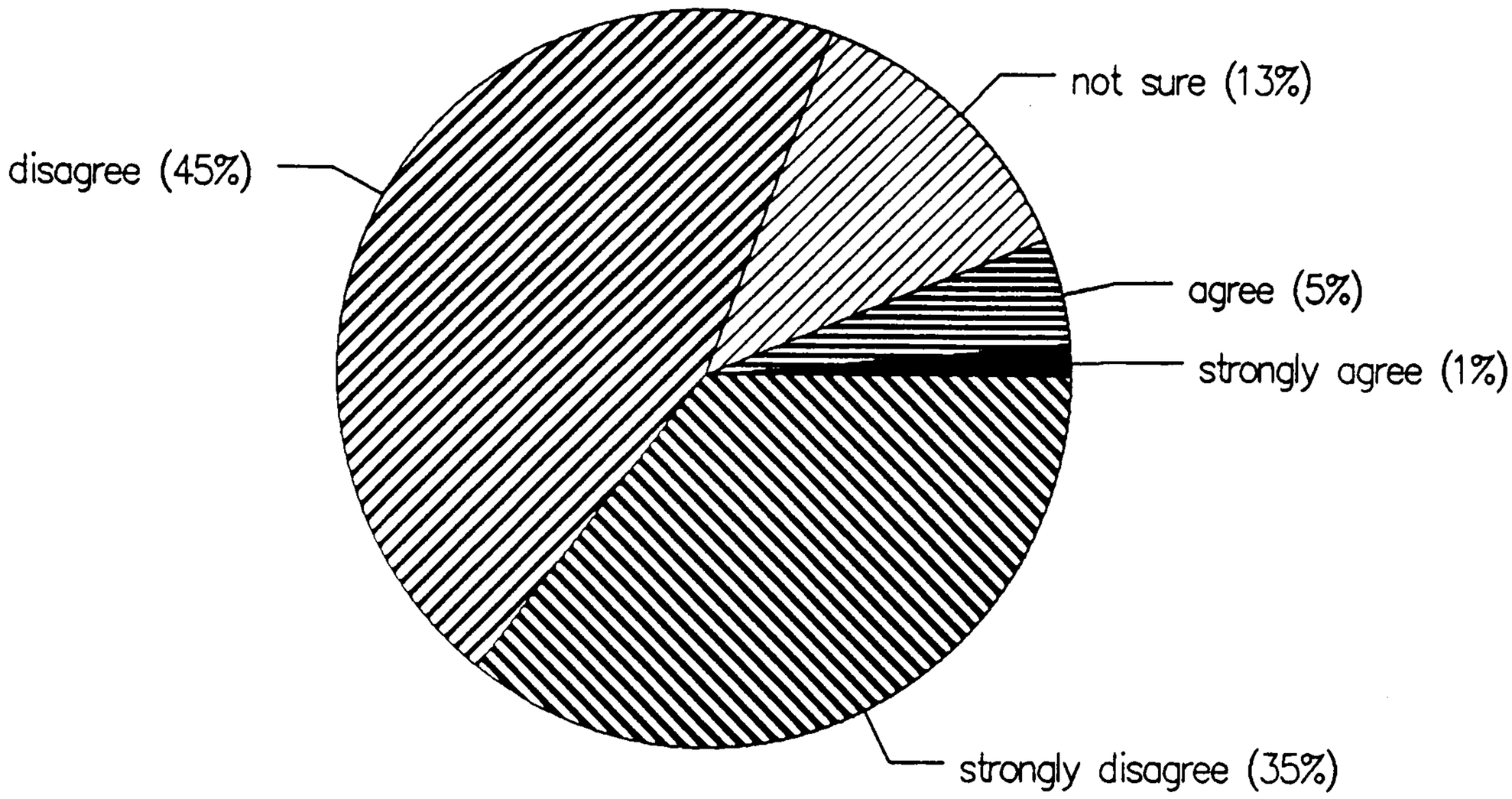
11.3 Students' perceptions of A level courses

From the results reported in Section 10.2 it is possible to build up a composite view of students' early perceptions of various aspects of A level courses. From Table 10.1 it can be seen that large majorities of students (> 80%) felt that A level courses dealt with interesting issues and that A level education encouraged students to think for themselves. Substantial majorities (> 60%) disagreed with the notion that A level work was largely irrelevant to everyday life and did not prepare students for their future careers. Although only fifty per cent felt that they were well-prepared for A level work, over seventy per cent felt that they were not having difficulty with the work set (Figure 11.2). A similar proportion of students disagreed with the statement "I have difficulty identifying with the subjects I am studying", suggesting perhaps a certain empathy, or at least an anticipated empathy, with the subjects they had chosen (Figure 11.2).

This early positivism corresponds broadly to the initial perspective described by Becker et al (1961) and may perhaps be interpreted as an application of students' current ideals to their new situation. Their lack of familiarity with an A level course perhaps inhibited its ability to influence these pre-formed ideals. Thus the overwhelming majority view is of students' confidence in their ability to cope and of high expectations, not only in terms of the nature of the course they were following, but

also in their anticipated relationships with teachers (See Figure 11.2).

a) Item 08 "I find A level work boring"



b) Item 10 "I have difficulty keeping up with the work set"

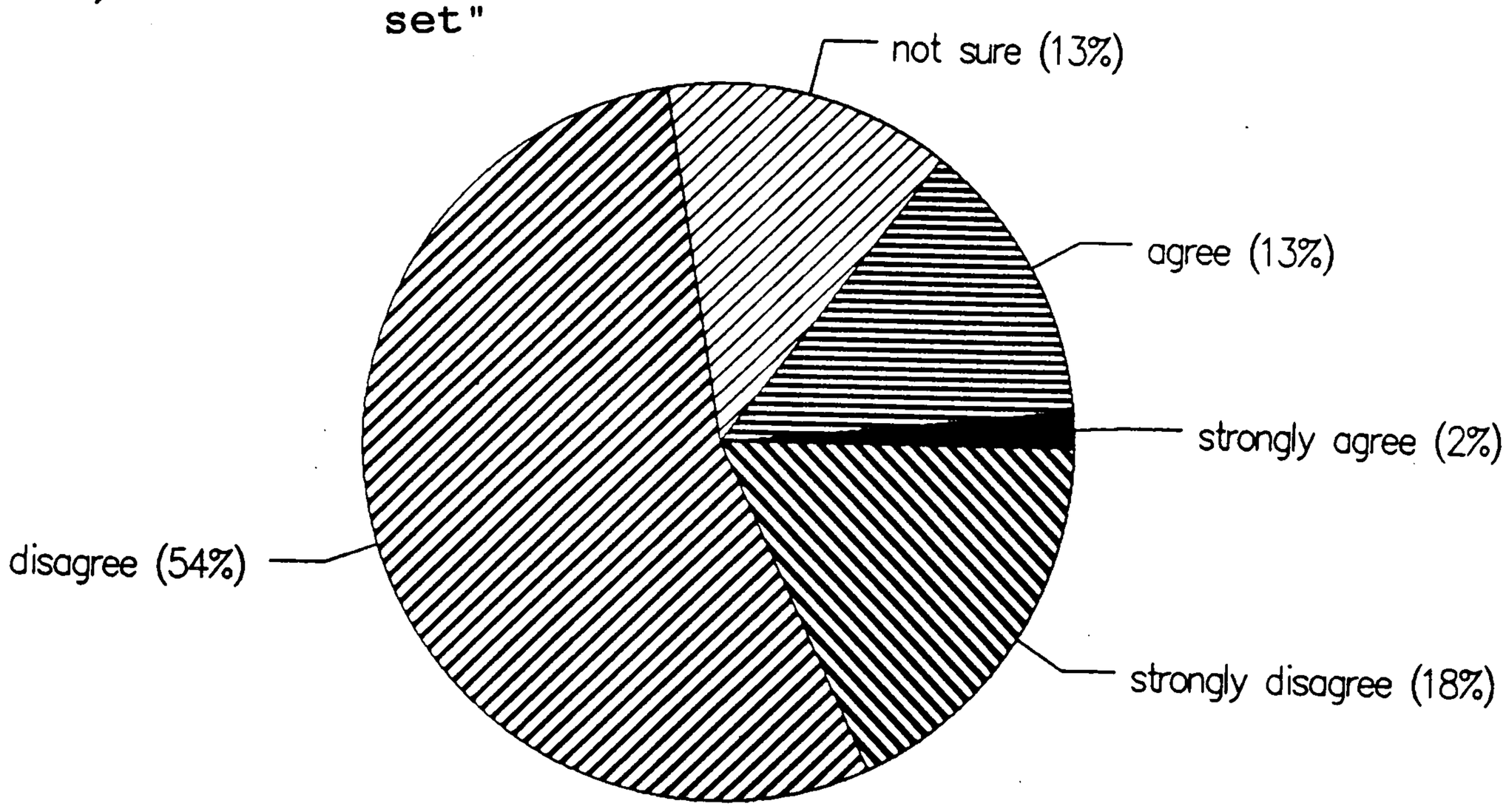
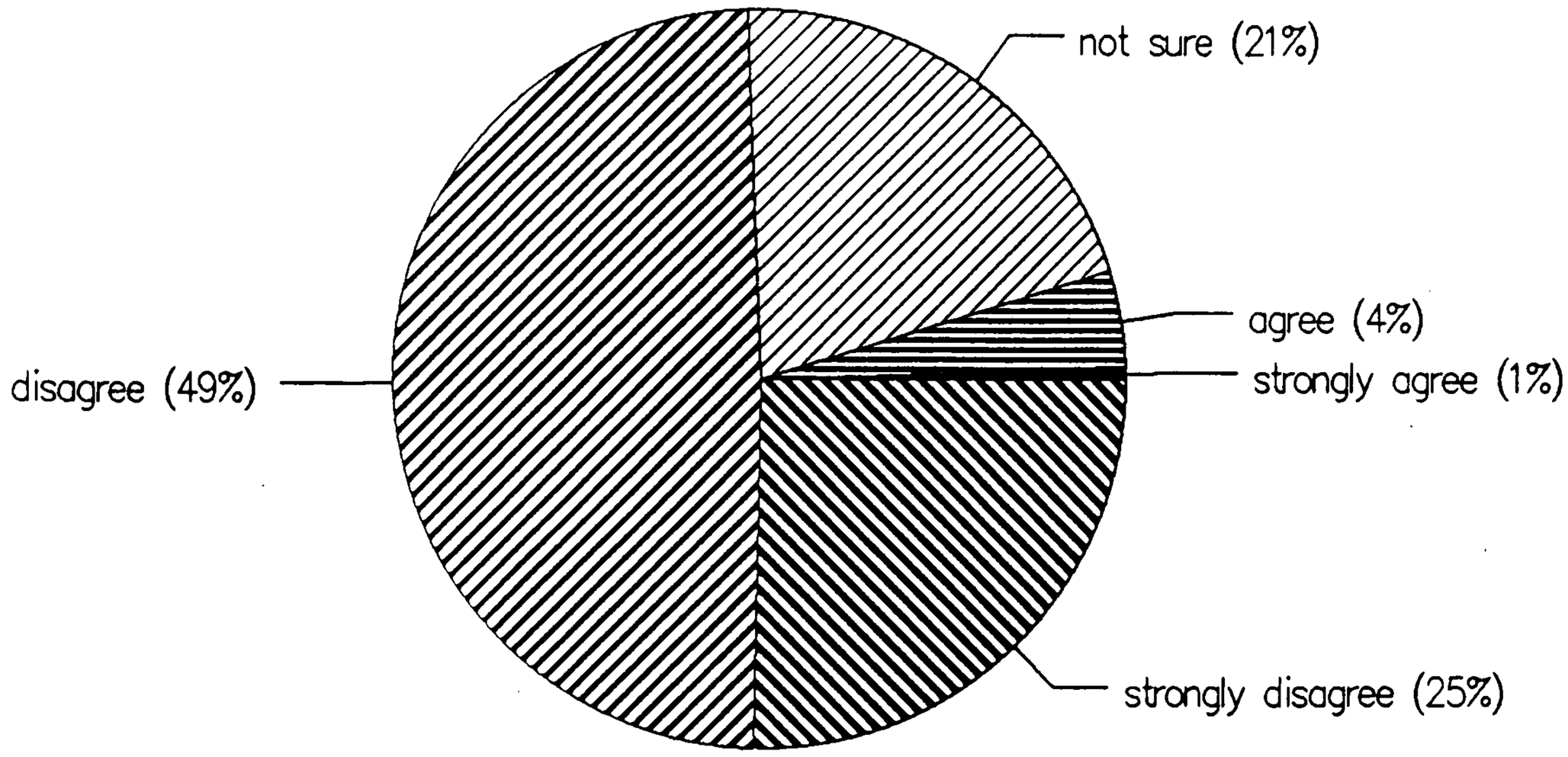


Figure 11.2 The distribution of students' responses to selected items from the "Perspectives" questionnaire

c) Item 09 "I find it difficult to identify with the subjects I am studying"



d) Item 31 "Most teachers are too formal in their approach to A level students"

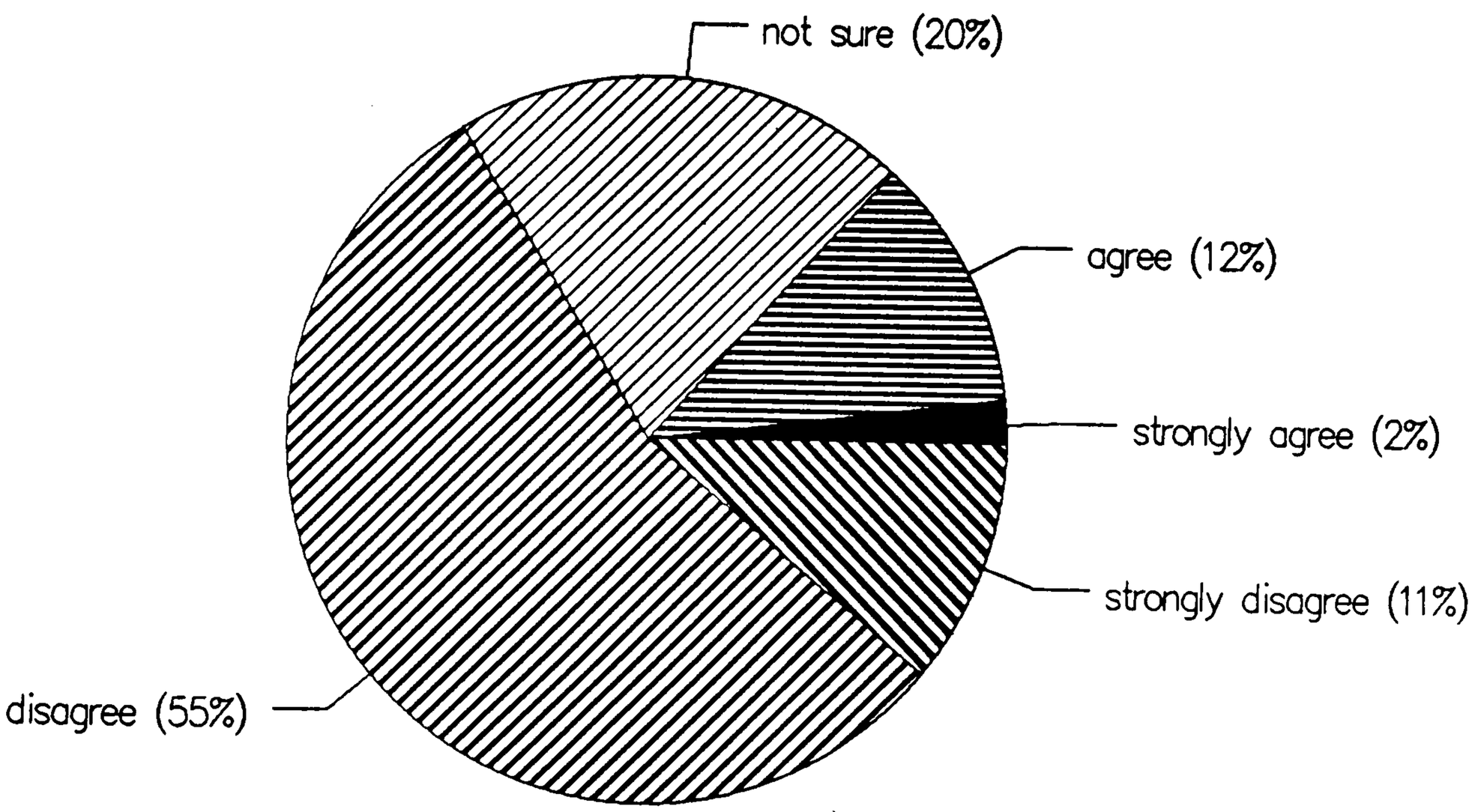


Figure 11.2 (continued) The distribution of students' responses to selected items from the "Perspectives" questionnaire

The results shown in Table 10.2 show that at the beginning of the course substantial majorities of students (> 60%) perceived A level work to be very competitive and felt that grades were a motivating factor in making them work harder.

The results reported in Table 10.3 show that the majority of students expected to be "spoon-fed" all that they needed to know for A levels. Almost seventy per cent agreed that teachers should provide all the information needed for the examination, and only about twenty per cent agreed that teachers should not present facts, but should act as guides to students' independent study.

This intellectual dependence on teachers has also been reported by Hopkins and Rudduck (1984) in their study of two hundred A level students in a range of sixth form settings (see Section 6.4). They suggest that for many students the knowledge deemed necessary for A level was located in the teacher's mind and class notes formed the backbone of sixth form study.

> *"Since notes are seen by so many students as the crutch on which they will depend for the examination, their preference for the security of notes structured or dictated by the teacher can outweigh their concern for their right as students to make their own notes".* (Hopkins and Rudduck, 1984)

Similarly in this study, from the results reported in Table 10.3, it seems that for the majority of students the concept of authoritative knowledge dominated their

expectations of the learning experience at A level, at least during the early part of the course.

Unlike the majority of studies reviewed in Chapter Six the longitudinal nature of this project permitted the study of changes in students' perspectives as they progressed through the two year course. From the results reported in Section 10.3 it is apparent that twenty-five of the thirty-four items which comprised the three factors of the "Perspectives" questionnaire yielded responses that changed significantly over time. Examination of these changes leads to the general conclusion that for several aspects of students' perceptions of A level courses, the initial positivism is not sustained.

For instance, the proportion of students who felt that they were well-prepared for A level work declined significantly during the first year of the course. Similarly, by the end of the first year, students were significantly more likely to admit to having difficulty keeping up with the work set, and were more likely to feel that they could do better.

With regard to students' perceptions of the nature of the course, it was apparent that as they progressed through the course students found A level work increasingly boring and had growing difficulty identifying with the subjects they were studying. There was also significantly less agreement with the view that A level education encourages students to

think for themselves. Within the same factor, students became increasingly less likely to disagree with the statement that striving for good grades interferes with real learning.

When considering the utility of A levels it seems that as students progressed through the course they were less likely to disagree with the view that their work was largely irrelevant to everyday life. Similarly they were progressively less likely to disagree with the statement that A level education did not prepare students for their future careers. It is interesting to note that the students were also less likely to agree with the view that A level education was the key to future success.

This disillusionment, or disappointment, of academic expectations has also been reported by Percy and Salter (1976) (see Section 6.3). With reference to earlier research in the USA, UK and Australia, they suggest that students enter the various forms of higher education with vague, but genuinely high expectations of their anticipated learning experience. However, Percy and Salter go on to say that study of their data leads to the impression that these high but vague expectations are often disappointed and students report that instead of excitement they find boredom, instead of challenge they find routine. The results of this study imply that a similar disillusionment is evident at A level in many dimensions of students perceptions' of their course.

Notwithstanding the above generalisations, it is not true to say that all aspects of students' perceptions changed in a negative way. Indeed the data derived from several items suggests that students became increasingly positive in their perceptions of some aspects of their course. For instance, by the end of the first year students were significantly less likely to agree with the view that A level work provided little opportunity for original research. Also, after completing the first year, students were significantly more likely to disagree with the notion that the whole course would have been a waste of time if they failed the final examinations.

With regard to student autonomy in learning it is interesting to note that students placed significantly less value on lessons and more value on their own time for learning as they progressed through the course. They were also significantly less likely to disagree with the statement that "teachers should only provide the basic principles of a subject, students should find out the details for themselves". Similarly students approaching the end of the first year were significantly less likely to agree with the view that teachers should provide all the information a student needs to know for the examination.

This growth in student autonomy, since the beginning of the A level course, is probably partly a reflection of the emotional development that has taken place concomitant to the physical development of late adolescence. It may also be explained by a change in teaching style, in particular the move away from the more structured approach of fourth and fifth year work towards the greater freedom for A level students to organise their own independent study. Certainly Percy and Ramsden (1980) found that many of the higher education students in their study valued highly the opportunity to work independently and follow their own interests. However, it must be stressed that although this study has shown that there was significant growth in students' autonomy, the starting point, at the beginning of the first year of A level study, was very low indeed (see p. 279) with the majority of students being very heavily dependent on the teacher.

It is interesting to note that there were no significant changes to most of the initial positive perceptions of teachers outlined in Section 10.2.1. Indeed the only statement which yielded any significant change was "most teachers would never admit they were wrong". After twelve months of A level study students were significantly more likely to disagree with this statement, suggesting perhaps a growth in their confidence in their relationships with teachers.

The relative consistency of students positive perceptions of teachers is perhaps surprising in view of the reported decline in interest outlined earlier in this section. This dichotomy leads to the tentative conclusion that students blame the nature of the courses for their dissatisfaction rather than the teaching methods employed. The results reported in Section 9.4 support this conclusion as only a relatively small proportion of dissatisfied students made reference to poor teaching in the reasons they gave for their discontent.

When examining the results reported in Chapter 10 it is interesting to note that some items of the questionnaire yielded changes over time which appeared to be associated with the imminence of the final examinations. For instance, on occasions one, two and three students increasingly disagreed with the notion that it was a complete waste of time for teachers to deal with material that was not on the syllabus, but there was no significant change in this view beyond the beginning of the second year. Similarly, although students generally tended to disagree with the statement that A level lessons provided little opportunity for discussion, towards the end of the second year the students disagreed with this statement significantly less than when they were just beginning the second year. Also, as the final examinations approached, the students were significantly less likely to disagree with the notion that A level work consists largely of facts to be memorized.

The constraining effect of examinations on teaching and learning has been the subject of much research (see Chapter Six). Becker et al (1961) suggest that because of their inability to learn everything in the time available the medical students in their study became discriminating in selecting areas of knowledge they considered to be important. The students also selected ways of studying that they felt were appropriate to their situation, for instance when choosing between memorizing and "thinking" about their work, memorization was often chosen because it took less time. Similarly Ramsden and Entwistle (1981), in their study of course perceptions and approaches to studying, reported that university departments rated highly by students on good teaching and freedom in learning had students with higher average scores on "meaning" orientation, whereas those departments that were seen to have a heavy workload and a lack of freedom in learning had students with higher average scores on "reproducing" orientation (see Section 6.3). In a more recent study Ramsden et al (1989) administered two questionnaires, one to assess learning processes and the other to examine school experience, to a large sample of school students in Australia. Subsequent analysis of the two sets of data gave strong support to the contention that approaches to learning are influenced by students' perceptions of sixth form work (see Section 6.4).

Although the present study is not concerned with study habits *per se*, from the evidence outlined above it does seem that increasingly as the examinations approached there was a significant move away from learning for understanding towards a minimalist reproductive strategy. Becker et al (1961) described a similar phenomenon in their study:

> *"In developing the perspective, students find not only a solution to the overload problem that reduces strain and tension for the rest of the year, but also a co-operative way of behaving that draws the class together ..... but they are not without resentment and a feeling that they have somehow been forced to give up the ideal of learning for themselves in order to pass the examinations".*
>
> (Becker et al, 1961)

The findings reported in Chapter Ten provide evidence of a certain amount of resentment amongst the students in this study. For instance, as students progressed through the course they expressed increasing difficulty identifying with their chosen subjects and there was significantly less agreement with the view that A level education encourages students to think for themselves. They also became increasingly less likely to disagree with the statement "Striving for good grades interferes with real learning".

From the foregoing account of the results gathered using the instrument developed for this study (Appendix two E) it is apparent that there is much to be learned about students' perceptions of A level courses. The application of this knowledge, for instance, the relationship between students' perceptions, approaches to studying and academic

performance, has yet to be investigated in this country with students in the 16-19 age group. Research involving sixth form pupils in Australia (Ramsden et al, 1989) has shown that perceived school environments and pupils' learning are related in a systematic way (see Section 6.4). This finding concurs with the results of several studies of students in higher education, for example, Ramsden and Entwistle (1981), Entwistle and Ramsden (1983) and Marton et al (1984) (see Section 6.3). The importance of this relationship, with its potential implications for school/college effectiveness, means that there is a need for further study of A level students' perceptions of their courses. It is hoped that the instrument used in this study can be further developed for this purpose.

Chapter twelve

Conclusions

Since the inception of A level courses in 1949 there have been major changes in the institutional provision of A level education. From being wholly the preserve of the public and grammar schools in the 1950s, A level education has survived the development of comprehensive schools in the 1960s and 70s, growth within the FE sector, and finally the development of separate sixth form provision, firstly in sixth form colleges and more recently in tertiary colleges. All these developments are discussed in detail in Chapters two and three.

Despite the changes in institutional provision, the A level system of examining has survived almost unscathed. Although there has been a plethora of proposals and counterproposals to broaden the sixth form curriculum (see Chapter four), all radical suggestions have been rejected. Instead, in the mid 1980s, the Secretary of State for Education sought to reduce early specialisation by means of AS levels which were introduced in 1987. However, thus far, it seems that this scheme has failed, the uptake of the new courses being very small indeed (see Chapter four). So what remains for students in the 1990s is a system of examining that was designed for their parents, or even their grandparents, in the late 1940s.

Within this system the majority of students choose three subjects for study, although some may choose fewer, and some more. Central to this research project was a retrospective analysis of the variables that had affected students' choice of subjects for study. Although fifteen variables were identified, this list may not have been exhaustive. Of the fifteen variables investigated several proved to be of only minor importance. One of the variables which most strongly influenced students' choice of subjects for study was the belief that the subject would be interesting (see Section 11.1). Also important were previous success in the subject and its compatibility with other subjects chosen. In most subject areas the perceived career value of a subject and its necessity for higher education were less influential on choice, the notable exceptions being the three sciences and German. The influence of parents, friends, subject teachers and careers teachers, where it existed at all, was probably only slight.

Notwithstanding the above generalisations, it was apparent that there was considerable variation between subjects in terms of the variables investigated. For instance, analysis in terms of academic ability, gender and type of institution attended revealed many significant differences, but few trends across several subjects. These are discussed in Section 11.1.

The diversity of strategies adopted by students when choosing subjects for study suggested that it is not realistic to propose a single model to explain subject choice at A level. In essence the individual student has to assess his/her subjective probabilities that choosing a particular subject would lead to various desired outcomes e.g. an interesting course, academic success and usefulness of the subject for career and/or higher education. The student also has to assess the value he/she attaches to such outcomes. The variability of this value between different subjects, coupled with the subjectivity of the probabilities of the outcomes means that the process of subject choice is precarious indeed.

Nevertheless, the students in this study embarked upon their chosen courses with a very positive outlook. The overwhelming majority view was of students' confidence in their ability to cope and high expectation of their courses (see Section 11.3). Unfortunately this initial positivism was not sustained. As students progressed through the course they found A level work increasingly boring and had growing difficulty identifying with the subjects they were studying. They increasingly questioned the utility of A levels and became more sceptical about the notion that A levels encourage independent thinking.

This growing disillusionment, or disappointment, of academic expectations was probably partly responsible for some of the dissatisfaction which was evident in this study. Almost eight per cent of the students made changes to their A level programme during the first two terms of the A level course, and twenty-four per cent of continuing students regretted choosing at least one of the subjects they were studying. Furthermore, almost fourteen per cent of the students who started A levels left their school or college prior to completing the course. This figure did not include students who had left to pursue A level courses elsewhere.

Rejection of subjects was inversely related to academic ability as judged in terms of examination success at 16+. In many cases it seems that discontent with a subject was simply a result of finding it too difficult. Other reasons given by students included lack of enjoyment, perceived lack of utility of certain subjects, and poor quality of teaching. These are discussed in Section 11.2.

Of the eighty-six per cent of students who completed the course, approximately thirty per cent might be expected to fail the final examinations, this being the usual failure rate at A level (DES, 1988b, 1989). Thus of one thousand five-hundred and sixty-nine students only about nine hundred and fifty, or sixty per cent, might be expected to complete the course successfully.

In conclusion it may be said that A levels in their present form do not seem to be meeting the needs of a substantial proportion of the students who are studying them. This may be even more true now for students who are studying A levels after GCSEs. Following the recent deliberations of SEAC and the NCC (see Chapter one) it is possible that a move away from A levels may occur in the not too distant future. If so, it is to be hoped that those responsible for the development of the new courses will pay due attention to the views and actions of the students themselves.

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APPENDICES

Appendix One Semi-structured interview schedule

This schedule was used to interview three, four or five students, either individually or in small groups, from one of each of the four types of institutions taking part in the survey. The transcripts of these interviews are available from the author for inspection if required.

Background information

Institution attended
Name(s) of student(s)
Sex
Age
Subjects studied at A level
Year in course
Academic attainment
 a) Number of O level passes prior to A level course
 b) Number of O level passes since beginning A level course

Course choice

1) Why did you choose to study A levels rather than any other course?
2) Were you aware of alternative courses?
3) Did you feel under pressure to opt for A levels rather than an alternative course?

Subject choice

1) What factors influenced your choice of subjects at A level?
2) Were there any difficult decisions to make?
3) What restrictions were operating on your choice of subjects?
4) Did you receive enough advice?
5) Were you ill-advised in any way?
6) If you had your time again would you still choose the same subjects? What changes would you make, and why?

Initial expectations

1) When you first entered the sixth form/college what did you expect A level work to be like?
2) Did you have any difficulties adjusting to the work?
3) At the very beginning, how successful did you think you would eventually be? Did you ever consider the possibility that you might not be able to cope, or might even fail?
4) Were you surprised by the amount of free time you had during the week? How did you initially spend your free time?

Approach to study

1) What factors do you think will affect your ultimate level of success at A level?
2) How much time do you actually spend on private study and what sort of work do you do in this time?
3) Do you feel that you study effectively?
4) How do you assess your progress?
5) What role do you think teachers should play in your learning?
6) How does your relationship with teachers affect your progress?
7) What sort of teaching do you feel is most effective?
8) Are you ever dissatisfied with any of the teaching you receive? In what ways?
9) Who decides *how much* work you do and the *type* of work you do?
10) What is your main source of motivation i.e. what keeps you going? Has this varied during the course?
11) What part do your friends play in your learning?
12) Is it important to be ahead of others in your group?
13) Does fear of failure, or not getting high enough grades, affect your work?
14) What other factors affect your work? / What factors do affect your work?
15) Do you feel that you take full advantage of all the educational opportunities that are available to you?
16) If you had your time again would you change your approach to study? If so, what changes would you make?

Value of A levels

1) In what ways do you feel you might be changed by your experience of an A level course?
2) What are the benefits of studying A levels?
3) To what extent do you think A levels are useful as a means of assessing general ability?
4) Do you think A levels are useful as a means of assessing future success?

Proposals for alternatives to A level

1) Does the present A level system provide a good general education? Should it do so?
2) Under the present system, should students be encouraged to take additional non-examination subjects? Should these be compulsory?
3) It has been suggested that the system should be changed so that students study a broader range of subjects? Is this a good idea?

Appendix two The instruments used

Appendix two A. Information for staff

THE POLYTECHNIC
WOLVERHAMPTON

EDUCATION RESEARCH UNIT
Director: A C Crocker
MSc, MEd, PhD, ABPS
Telephone: 0384 59741

A LEVEL STUDENTS IN

SCHOOLS AND COLLEGES

This research project seeks information from students who completed their fifth year of Secondary Education in June 1986 and are currently following a full-time A level course in one or more subjects.

Please ask students in the above category to complete the enclosed questionnaires at the time of issue. This should take approximately 20-30 minutes. Students can be assured that all information divulged will be treated in the strictest confidence. Additional copies of the questionnaire are available from : _____

Completed questionnaires, together with any spares should be returned to _____ by __/__/__ in the envelope provided.

It is anticipated that data will be collected from approximately 2 000 students in schools and colleges in Birmingham, Dudley, Solihull and Staffordshire Education Authorities. A summary of the results of the survey will be made available to all participating institutions as soon as possible.

Thank you in anticipation of your help.

Linda Garratt
(Research Student)

Appendix two B. Information for students

A LEVEL STUDENTS IN

SCHOOLS AND COLLEGES

SURNAME : _____ FORENAME : _____

SCHOOL / COLLEGE : _____

TUTOR GROUP : _____

The information derived from these questionnaires will be used in a Research Project being carried out at Wolverhampton Polytechnic, Faculty of Education.

As soon as the forms have been completed they will be checked for any omissions. If there are none, your questionnaire will be allocated a number. This front sheet will be removed and destroyed.

If there are any omissions, you will be asked to make these good within the next few days. Your questionnaire will then be allocated a number. This front sheet will be removed and destroyed.

The information you provide will thus be treated in the strictest confidence. It will not be divulged to any teachers or students.

A summary of the results of this study will be made available to you at a later date.

Thank you for your help and co-operation.

Appendix two C. The "BACKGROUND INFORMATION" questionnaire

For office use : Student Number [| | | |] 1–4

Questionnaire [1] 5

Occasion [1] 6

BACKGROUND INFORMATION

This questionnaire gathers general information about you and your educational background.

AGE years months [. | .] 7–10

SEX male 1 female 2 [ ] 11

Name of present school / college _____

Office use

[|] 12–13

[|] 14–15

SUBJECTS STUDIED IN FOURTH AND FIFTH YEAR

SUBJECT	GRADE OBTAINED (please tick box) A	B	C (including C.S.E. grade 1)	Any other grade	
English language					[ ] 16
English literature					[ ] 17
Mathematics					[ ] 18
Physics					[ ] 19
Chemistry					[ ] 20
Biology					[ ] 21
Human biology					[ ] 22
French					[ ] 23
German					[ ] 24
Geography					[ ] 25
History					[ ] 26
R.E.(any syllabus)					[ ] 27
Art (any syllabus)					[ ] 28
OTHER SUBJECTS					[ ] 29
					[ ] 30
					[ ] 31
					[ ] 32

Office use

SUBJECTS CURRENTLY BEING STUDIED AT A-LEVEL

How many subjects are you studying at A-level ? (Not including General Studies) ☐ 33

Please list your A-level subjects in the table below.

A-level subjects
34 ☐ 35
36 ☐ 37
38 ☐ 39
40 ☐ 41

Do you consider yourself to be (Please tick appropriate response)

1) an arts specialist
2) a science specialist
3) not particularly specialized on either side. ☐ 42

Are you following a course in General Studies which may lead to an examination qualification ? YES ☐ NO ☐ 43

Are you studying for any extra O-levels ? YES ☐ NO ☐ 44

HIGHER EDUCATION AND CAREER

Do you hope to go on to higher education after A-levels e.g. university or polytechnic ? YES ☐ NO ☐ 45

If so, please indicate what course you would like to follow. _____

_____

Do you have a specific career in mind ? YES ☐ NO ☐ 46

If so, please indicate what career this is. _____

_____

Appendix two D. The "SUBJECT CHOICE" questionnaire

For office use : Student Number [| | | |] (1–4)

Questionnaire [2] (5)

Occasion [1] (6)

SUBJECT CHOICE AT A-LEVEL

This questionnaire seeks information about your reasons for choosing particular subjects to study at A-level. Please complete one table for EACH subject you study (not including General Studies). Write the name of the subject you are referring to clearly in the box provided.

Office use [ ] (7–8)

A-level subject being studied [ ]

For each statement please tick one box to indicate the extent to which that factor influenced your choice of this subject.

STATEMENT	DEGREE OF INFLUENCE			
	A lot	A little	Not at all	
Advice of careers teacher				9
Advice of subject teacher				10
Advice of parent(s)				11
Advice of older student who had done subject				12
Advice of friend(s) in same year group				13
Subject needed for particular course at university/poly				14
Subject needed for particular career				15
Subject useful for life in general				16
Thought subject would be a challenge				17
Thought subject would be interesting				18
Thought subject would go well with other subjects				19
Thought subject would be well taught				20
Thought subject would be easier than some others				21
Successful in this subject at O-level/C.S.E.				22
Friend doing same subject				23

A-level subject being studied [ ] (24–25)

STATEMENT	DEGREE OF INFLUENCE			
	A lot	A little	Not at all	
Advice of careers teacher				26
Advice of subject teacher				27
Advice of parent(s)				28
Advice of older student who had done subject				29
Advice of friend(s) in same year group				30
Subject needed for particular course at university/poly				31
Subject needed for particular career				32
Subject useful for life in general				33
Thought subject would be a challenge				34
Thought subject would be interesting				35
Thought subject would go well with other subjects				36
Thought subject would be well taught				37
Thought subject would be easier than some others				38
Successful in this subject at O-level/C.S.E.				39
Friend doing same subject				40

Office use

A-level subject being studied [ ] 41 [ ] 42

For each statement please tick one box to indicate the extent to which that factor influenced your choice of this subject.

STATEMENT	DEGREE OF INFLUENCE			
	A lot	A little	Not at all	
Advice of careers teacher				43
Advice of subject teacher				44
Advice of parent(s)				45
Advice of older student who had done subject				46
Advice of friend(s) in same year group				47
Subject needed for particular course at university/poly				48
Subject needed for particular career				49
Subject useful for life in general				50
Thought subject would be a challenge				51
Thought subject would be interesting				52
Thought subject would go well with other subjects				53
Thought subject would be well taught				54
Thought subject would be easier than some others				55
Successful in this subject at O-level/C.S.E.				56
Friend doing same subject				57

A-level subject being studied [ ] 58 [ ] 59

For each statement please tick one box to indicate the extent to which that factor influenced your choice of this subject.

STATEMENT	DEGREE OF INFLUENCE			
	A lot	A little	Not at all	
Advice of careers teacher				60
Advice of subject teacher				61
Advice of parent(s)				62
Advice of older student who had done subject				63
Advice of friend(s) in same year group				64
Subject needed for particular course at university/poly				65
Subject needed for particular career				66
Subject useful for life in general				67
Thought subject would be a challenge				68
Thought subject would be interesting				69
Thought subject would go well with other subjects				70
Thought subject would be well taught				71
Thought subject would be easier than some others				72
Successful in this subject at O-level/C.S.E.				73
Friend doing same subject				74

RESTRICTIONS ON SUBJECT CHOICE

Office use

Do you feel that your choice of A-level subjects was in any way restricted ? Please tick appropriate box.

YES	NO
☐ 1	

If you answered YES to the above question, please complete the rest of this section. Indicate with a tick which of the following restrictions applied to you.

Subject not available at this school/college	☐	2
Advised against studying a particular combination of subjects	☐	3
Timetable restrictions made it impossible to study particular combination	☐	4
Failed particular subject at O-level so could not do that subject at A-level	☐	5
Had not done particular subject at O-level so could not do that subject at A-level	☐	6
Teacher(s) would not allow me to do particular subject	☐	7
Parent(s) would not allow me to do particular subject	☐	8
Limited success at O-level left me with little choice of A-levels	☐	9

REJECTION OF OTHER SUBJECTS

Please indicate with a tick which of the following factors, if any, resulted in you not choosing other subjects for A-level study.

Other subjects were too difficult	☐	10
Other subjects involve too much hard work	☐	11
Other subjects contain too much factual material	☐	12
Other subjects provide little opportunity for thought	☐	13
Other subjects provide little opportunity for discussion	☐	14
Other subjects are boring	☐	15
Other subjects were poorly taught at O-level/C.S.E.	☐	16
Other subjects are poorly taught at A-level	☐	17

Appendix two E. The "STUDENT PERSPECTIVES" questionnaire

STUDNO		1 - 4
QUEST	4	5
OCC	3	6

STUDENT PERSPECTIVES ON A-LEVEL COURSES

This questionnaire is designed to find out your views on some aspects of your A-level work. Please write the number of the most appropriate response into the box to indicate to what extent you agree or disagree with each statement. Work quickly through the questionnaire. Do not spend too long thinking about each statement.

strongly agree	agree	not sure	disagree	strongly disagree	
1	2	3	4	5	

1. I feel that I was well-prepared for A-level work.		7
2. I enjoy A-level work.		8
3. I learn more in my own time than I do during lessons.		9
4. I would like more time to discuss my work with teachers on an individual basis.		10
5. I prefer to learn from textbooks rather than from teachers.		11
6. I prefer to work by myself rather than with other students.		12
7. I find it embarrassing to discuss my work with other students.		13
8. I find A-level work boring.		14
9. I find it difficult to identify with the subjects I am studying.		15
10. I have difficulty keeping up with the work set.		16
11. I feel it is important to be ahead of other people in the group.		17
12. I feel I could probably do better than I am doing at the moment.		18
13. I need to be told exactly what work to do.		19
14. I find it difficult to decide for myself just how much work I should do.		20
15. I am confident I will be able to get the grades I need.		21
16. I lack the self-discipline necessary for effective study.		22

strongly agree	agree	not sure	disagree	strongly disagree
1	2	3	4	5

17. I do not get enough help from teachers.		23
18. I am not sufficiently mature to plan out all my work for myself.		24
19. The best A-level teachers are always highly qualified in their subject.		25
20. Teachers should only provide the basic principles of a subject, students should find out the details for themselves.		26
21. Teachers should not present facts, instead they should act as guides to students' independent study.		27
22. Teachers should stick to the point of the lesson and not digress.		28
23. There is no need for teachers to present their own point of view during lessons.		29
24. Teachers should provide all the information a student needs to know for the examination.		30
25. It is a complete waste of time for teachers to deal with material that is not on the syllabus.		31
26. Teachers should use lesson time to explore new ideas which are not in the textbooks.		32
27. Teachers rarely have time to discuss work with students outside lessons.		33
28. Most teachers are unable to understand why students find some topics difficult.		34
29. In order to succeed it is necessary to make a good impression on the teachers.		35
30. Most teachers would never admit they were wrong.		36
31. Most teachers are too formal in their approach to A-level students.		37
32. Most teachers are not interested in discussing work with students outside lesson time.		38
33. A-level work is very competitive.		39
34. A-level lessons provide little opportunity for discussion.		40
35. A-level work consists largely of facts to be memorized.		41
36. A-level courses often deal with interesting issues.		42
37. A-level courses are so packed with facts that there is little time to think about the work you are doing.		43
38. A-level courses provide little opportunity for original research.		44
39. A-level work is largely irrelevant to everyday life.		45

	strongly agree	agree	not sure	disagree	strongly disagree	
	1	2	3	4	5	
40. A-level students should be given more freedom to plan their own work.						46
41. A-level study must have priority over one's social life.						47
42. A-level education teaches students to appreciate knowledge for knowledge's sake.						48
43. A-level education encourages students to think for themselves.						49
44. A-level education places too much emphasis on passing examinations.						50
45. A-level students have to rely too much on their own initiative.						51
46. A-level students place too much emphasis on grades						52
47. A-level education is the key to future success.						53
48. The main purpose of A-level education is to gain a place at a university or polytechnic.						54
49. A-level education does not prepare students for their future careers.						55
50. A-level work is a good preparation for higher education e.g. university or polytechnic.						56
51. A-level work teaches students to think critically.						57
52. Doing A-levels changes your outlook on life.						58
53. Striving for good grades interferes with real learning.						59
54. The thought of failure or not getting good enough grades makes me work harder.						60
55. If I failed the final examinations I would feel that the whole course had been a waste of time.						61

Appendix two F. The "UPDATE" questionnaire

STUDNO		1-4
QUEST	5	5
OCC	2	6

UPDATE ON BACKGROUND INFORMATION

This questionnaire gathers general information which will be used to update the profile you provided last term. Please answer all questions.

1. Did you take any O level examinations in November 1986?

yes no ☐ ☐ 7

If so, please indicate how many passes (grade C and above) you achieved in the November O level examinations.

☐ 8

2. Have you dropped any A level subjects since the end of October 1986?

yes no ☐ ☐ 9

If so, please indicate which subjects you have dropped, and why.

Subject:_____ Reason:_____ 10
_____

Subject:_____ Reason:_____ 11
_____

Subject:_____ Reason:_____ 12
_____

3. Have you started any new A level subjects since the end of October 1986?

yes no ☐ ☐ 13

If so, please indicate which new subjects you have started to study, and why.

Subject:_____ Reason:_____ 14
_____

Subject:_____ Reason:_____ 15
_____

Subject:_____ Reason:_____ 16
_____

4. If you had your time again would you still choose to follow A level courses?

yes no

17

If you answered NO to the above question, please indicate what you would do instead of A levels.

_____

_____

IF YOU ANSWERED YES TO QUESTION 4 PLEASE ANSWER THE FOLLOWING QUESTIONS.

5. If you had your time again would you still choose the same A level subjects?

yes no

18

If you answered NO to the above question, please indicate which subject(s) you would not choose.

Subject:_____ Reason:_____ 19

_____

Subject:_____ Reason:_____ 20

_____

Subject:_____ Reason:_____ 21

_____

Which subject(s), if any, would you do instead?

Subject:_____ Reason:_____ 22

_____

Subject:_____ Reason:_____ 23

_____

Subject:_____ Reason:_____ 24

_____

6. Do you hope to go on to higher education after A levels, e.g. university or polytechnic?

yes no

25

If so, please indicate what course you would like to follow:_____

7. Do you have a specific career in mind?

yes no

26

If so, please indicate what career this is:_____

_____

Appendix three The student sample

Appendix three A. Distribution between institutions

Institution	number	N	%	Cumulative Frequency (%)
Schools	1	13	0.8	0.8
	2	32	2.0	2.9
	3	32	2.0	4.9
	4	26	1.7	6.6
	5	44	2.8	9.4
	6	10	0.6	10.0
	7	15	1.0	11.0
	8	22	1.4	12.4
	9	39	2.5	14.9
	10	47	3.0	17.8
	11	34	2.2	20.0
	12	66	4.2	24.2
	13	69	4.4	28.6
	14	75	4.8	33.4
	15	120	7.6	41.0
	16	58	3.7	44.7
Sixth Form	17	298	19.0	63.7
Colleges	18	65	4.1	67.9
	19	70	4.5	72.3
	20	33	2.1	74.4
	21	31	2.0	76.4
Tertiary	22	173	11.0	87.4
Colleges	23	88	5.6	93.1
FE	24	49	3.1	96.2
Colleges	25	11	0.7	96.9
	26	49	3.1	100.0
		1569	100.0	

Appendix three B. Distribution in terms of examination success at 16+

Number of examination successes*	N	%	Cumulative Frequency (%)
0	11	0.7	0.7
1	20	1.3	2.0
2	32	2.0	2.0
3	87	5.5	9.6
4	139	8.9	18.4
5	184	11.7	30.1
6	207	13.2	43.3
7	219	14.0	57.3
8	279	17.8	75.1
9	278	17.7	92.8
10	81	5.2	98.0
11	26	1.7	99.7
12	5	0.3	99.9
13	1	0.1	100.0

* Grade C or above at O level (or equivalent)

Appendix four Classification of A level subjects

ARTS	SCIENCES	UNCLASSIFIED
Ancient history*	Applied mathematics*	Accounts
Art*	Biology*	Archeology
Chinese literature	Chemistry*	Bus. studies*
Chinese language	Computer science	Com. studies
Classical civil.	Electronics	CDT
Dance	Engineering science	Design
Drama	Environmental science	Economics*
Design	Further mathematics	Eng. drawing
English literature*	Geology	Geography*
English language	Human Biology	Home econ.
Fashion and fabrics	Mathematics*	Ind. studies
French*	Maths with mechanics*	Media Tech.
German*	Maths with statistics*	Photography
Greek	Physics*	Psychology
History*	Pure mathematics*	Social stud.*
Home economics	Social biology	Sociology*
Italian	Statistics	Sports stud.
Latin	Technology	Surveying
Law		TD
Malay language		
Modern History*		
Music		
Needlework		
Philosophy		
Politics		
Pottery		
Religion and Philosophy		
Religious studies		
Russian		
Urdu		

* subjects that were included in the analyses of this study

Appendix five Reasons given by students for dissatisfaction with A level subjects

N.B. See page 202 for descriptions of reasons

Appendix five A. Reasons given for dropping subjects - Phase II

English literature (7)

2		Too many essays to write
2		Too much work, interfering with my other A levels
3		Didn't like it
3		I got bored
2	3	Large volume of work, not interested in subject
3		Found it unenjoyable and boring
-		-

Mathematics (23)

2		Was doing four subjects and had too much work
1		I found the work difficult
1		Struggling
2		Three subjects were too much work
1		Too difficult and my other subjects were suffering
2	1	Couldn't keep up and was too difficult
5		Did wrong syllabus in the fifth year
1	7	Was finding it hard, many factors affecting long decision
5		Was not qualified in O level maths
1	3	Found it difficult and didn't like it
1		Too hard
2		Could not cope
2		Couldn't cope
1		Didn't understand work
3	1	Didn't like it, couldn't do the work
1		I found it too difficult
7		Felt it was not working for me
1		Too difficult
1		Too difficult
2		Couldn't cope
1	6	Standard of work too high, didn't like teacher
1		Difficulty in understanding
1		Complete non-understanding of what was going on

Physics (16)

2		Not enough time for necessary music practice
1	2	Became too hard, could not keep up with work
5	7	Hadn't passed O level, didn't feel confident - only girl
1		I did not understand a word of it
1		I could not understand the work
7		Incompatibility

7		Started another subject
3		Boring
6	7	Teacher no good. 1st and 2nd year groups together
6	1	Bad teacher and I didn't understand the subject
3		Didn't enjoy it
2		Doing 4 A levels at the time
1		I found the subject extremely difficult
7		Wanted to take English, physics was most practical to drop
1	7	Maths too difficult. Also wouldn't fit into school time table
1	2	Couldn't understand it and needed the extra time

Chemistry (6)

1		I found it too hard
1		Could not cope, difficulty in understanding
1		Course too difficult
1		Too difficult
1	2	Too hard, other two subjects suffering
1	3	Didn't understand basics, didn't like the subject

Biology (2)

2	6	Couldn't cope with work or teacher
7	1	Rather too scientific - I found it difficult

French (5)

1	7	Jump from O to A very big, change in timetable permitted woodwork
3		I'd done it for half my life and it was getting boring
3		I did not like it
6		Had small disagreement with (teacher)
-		-

German (1)

2		Work load too heavy

Geography (3)

7		Because too few people in group - group had to fold
3		Lack of interest
1		I found it confusing and hard to understand

History (9)

1	7	Poor grades, change in timetable permitted woodwork
4		No longer needed because of change in career plans
1	2 3	Too difficult, too much work, wasn't interested

2		Couldn't cope with 3 A levels
4		Not suitable
5		No past exam pass
5		No previous exam
2		Because I couldn't cope with 3 A levels and an O level
1	3	Didn't enjoy it, found it hard

Economics (12)

1		Too hard
7	1 3	Not sure about taking it in 1st place, very difficult and disliked it
4		Did not suit any of my future interests
3		Disliked the subject
7		Didn't like the school I had to use as part of consortium
2	3	Didn't like work, couldn't cope
2		It interfered time-wise with my A level history course
3		I found it boring and of no interest to me personally
1		I couldn't understand it
7		Because I wished to do computers which I was more interested in
1		Found it confusing
6		My teacher was exceedingly vile and generally foul tempered

Sociology (5)

2	3	Found it uninteresting and could then spend more time on other subjects
6		Problems with the teachers
1	3	Found lessons boring and complicated
6		Unqualified teacher who taught (his/her) lefty views
1	3	Too complex, boring

Appendix five B. Reasons given for not choosing subjects if students had their time again - Phase II

English literature (12)

7		No factual information to learn, no real aim
2		Not what I expected in work load
1		Causing me stress as I can't do the work
1		Finding it hard to cope with
7	1	Not enough modern works on the syllabus and I'm not very good at it either
3		Not as enjoyable as I thought it would be
2		Too time-consuming
3		Too slow-going
1		I don't feel capable of passing with a good grade
6		Change to new methods of teaching and presentation of work too difficult to adjust to
3		Not very interesting
7	1	Literature goes back to the 14th century - difficult to understand

Mathematics (29)

1		Finding it quite difficult
1		Very hard
1		Too difficult
7		Little scope for imagination*
3		Not very enjoyable or interesting
1		Too difficult
6		Some teaching difficult to follow
1		Because it is very difficult even though I work hard at it
1		Find it extremely difficult
7		I can't get the right answers
1		Very difficult!
3	1	Very boring and very difficult
4		Because it doesn't fit too well with English and Classical Studies
1	7	It's very difficult and very different to what I expected
1	3 6	Too hard, too boring, teacher is useless
1	7	I have found the course very demanding and have not got to grips with some sections
2		Too much to learn
7		Much of the course repeats AO and O levels
1		Very hard
1		Very difficult at A-level
1		I find it difficult and hard to understand
1		Not very good at it
1		Can't understand
4		Do not intend to take it any further or use it specifically for a career
1		Its harder than I thought
7		I'm not suited to the subject
1		Feeling I'm not going to pass the exam

1		Too hard
1		Too hard

Physics (33)

1		Difficulty in understanding it
7		Cannot relate to the subject
3		Don't enjoy it
1		Very hard
7		Little scope for imagination*
1		Too hard
2		Very hard to keep up with topics
1		Too hard! Too demanding
1		Find difficult to do without maths
1	2	It is very hard and takes up a lot of my time
3		It's boring and I don't enjoy it
1		Too hard
1	4	Too hard, no use for my career
3		Not interesting
3	6	Boring due to teacher
1		Very demanding
1		Too hard
1	3	Because it's too hard and uninteresting
6	1 4	Teaching isn't very good. Is very hard, could have done other subjects for my career intentions
7		Nuffield physics is over-practical and often non -logical
1		I find it difficult to understand
3		Do not like Nuffield physics
7	4	Too vague at times, can seem irrelevant to career
1		Too difficult
1		Very difficult to grasp
1	7	Very hard, personality clash with teacher
7		Nuffield course
1	7	Extremely hard to learn and I would have preferred geology
3	4	Don't enjoy it, I no longer need it for the profession I want to do
3	4	I do not enjoy it and do not need it
1	5	Rather difficult to do with no chemistry qualification
1		Hard to understand
1		Too difficult

Chemistry (34)

6	1	The method by which it is being taught here is difficult to understand
1		Too confusing at times
7		I would prefer to do further maths
1		Too difficult
3		Little scope for imagination*
7		Prefer to follow arts subjects+
3		Dislike of the subject
6	7	Teacher's attitude toward class, more theory/less practical
1		Not a very straight forward subject

1		Difficult to adjust from O-level
1		Difficult to understand and apply
1		Finding work very difficult
4		I want two subjects which go better with English
4	1	Not essential for my desired degree course, should have chosen an easier subject
1		I find it difficult to understand
1		I'm finding it too difficult
1	6	Find it very confusing and some of the teaching is too fast
3		Because I don't like it
7		Involves maths
1		I find it difficult
1	2	Too difficult, involves too much work and background reading
1		My understanding of the subject is minimal
6		Form of tuition incompatible with my way of thinking
3		Not as interesting as I thought it was
7	1	Too many calculations, very hard, very stressful !
7		Is not the type of course I expected
1		Too difficult
1		I don't understand all the organic chemistry
7		Too many practicals
1		Too difficult
3		Too dull and mediocre
3		Boring
1		I find it too difficult
3	7	Boring and all maths

Biology (17)

1	5	Although I enjoy it, its' very difficult as I am the only one without chemistry
3	2	Boring - too much theory
7		Prefer to follow arts subjects+
2		Endless notes
1	2 3	Too much complicated and uninteresting hard work
2		Too much work
7	3	Don't like the practicals and find it boring
7	1	Cannot get to grips with it, find it difficult
7		Too much biochemistry
3	1	Uninteresting and too hard
4		A subject could be chosen to make a better A-level course (physics)
4		No use in later studies
2		Too much factual learning
1	7	Too difficult, too much maths involved
7		Conflicts with method of thought for arts (I do French and English)
3		Not interesting
1		It is a hard course to follow

French (15)

1		I find it very difficult
7		Would have preferred to do Government and Politics
1		Useless at it

1		The jump is too great between O and A level
1		Too complicated
1		I'm not very good at it
7		Too literature based
1		Large gap between O and A level work
4		Not helpful for my career choice (chemistry)
1	5	I find it too hard due to insufficient O level training
1	5	I find it very hard probably due to a poor O level basis
7		-
1		Much harder work than I had anticipated
1	3	Very different from O level - very hard and not so enjoyable
3	7	Very boring, not what I expected to do

German (5)

1		Very difficult grammar
6		We have not done any serious work
1		Because I find it very difficult
1		I find it too hard
3		It is more boring than I expected

Geography (14)

4		For the career I have in mind it is not very useful, although I do find it interesting
7		Too much economic and regional, prefer physical
3		I do not like it
1	3	I find the course hard and boring, unlike the O level course
3		It is uninteresting
2	1	Too much work and quite difficult
4		French would be more useful for the university course I want
6	1	Teacher does not explain clearly enough. Too confusing and hard
6		Teachers no good, not explained properly
1	3	I find it difficult to understand and very boring
3		Uninteresting
4		No good for career purposes
6		Bad teaching
6		Teaching method for physical unsuitable for me, lack of sense and order

History (25)

7	3	I would not have done it if timetable had permitted Government and Politics, it is very boring
2	3	Heavy workload and I'm worried that I won't be able to learn it all for the exam, and the lessons are dull
7		Because it's the Tudor period
1	3	Too complicated, no interest
1		Find it difficult

3		Work's very dull, lessons are not interesting, no enjoyment
7		I'd much prefer to take biology. I don't enjoy the period of history we are studying
3	4	Uninteresting, not helpful in life
1		My essay writing is not as good as I would like
7		To much political and not enough social
3		I don't find it as interesting as I expected
4		Need 3 sciences for most higher education science course
3		Occasionally monotonous
3		Losing interest
1		Difficult to answer properly
3	1	I find it uninteresting and difficult to understand
1	7	Difficult to understand, too political
3		I don't find it interesting at all !
1		Too hard
3		I find it boring
4		Not particularly useful for the future
1		Work is too difficult
7		Nothing like I expected
7		Would prefer another subject (Media Studies)
6		Teacher's standards are too high for me

Economics (47)

3		Extremely boring
1	3	I find it hard to grasp the terminology and also find it uninteresting
3		Don't like it, doesn't interest me
1	3	Find it hard and uninteresting
7		Not what I expected it to be like
3	4	It does not interest me, and I don't think it is necessary for a career in business
3	1	Uninteresting and difficult
7		Not at all what I expected
3	1	Boring, too hard
7		I have no confidence in my exam technique
3		Not very interesting
7		I can't grasp the subject
1		Difficult
3		Uninteresting
3		I find it uninteresting
6		The teachers confuse me, even on simple topics
3	6	Boring, badly presented
1		Too difficult
7		I am not progressing as fast as I would like
3		Not interested
7	1	Too technical, understanding hard
1		Because I find it difficult to understand
1		Cannot understand any of it
1		It is very difficult to understand
2		Too much theory
1		It is very difficult
3		Too dry
6		Teacher
1		I find it hard to understand at times
6	3	Teacher no good, made me dislike the subject

1		It is too difficult
1		It is extremely difficult to understand and learn
7		Not as I anticipated the course would be
3	1	I do not like it, in fact I'm hopeless at it
4		Take a science to give a wider base
4		Don't see how it applies to real life - yet !
7		Not as I expected
3		The subject does not interest me as much as my other subjects
1	5	Too difficult to come to terms with after no previous experience of the subject
3	1	Boring, hard
3	2	Not stimulating, too many facts
7		It is based on dangerous misleading assumptions
2	1	The course is far too theoretical and difficult to learn
2		Too much theory, not enough practical
3	1	Boring, complicated, load of theoretical rubbish
-		-
-		-

Sociology (13)

4		Not valuable to future career
6		Not taught well enough
3		Boring
1	2 7	Sociological terms too complicated, all note-taking and "perspective" study
3		It's not very interesting
3		Boring
1		Find it difficult and don't understand it
7		I don't agree with a lot of the views in it
5		Because I hadn't done the O level
1		I find it difficult to understand and follow
4	3	Too little relevance and boring
1		Too complicated
3	4	Uninteresting and I don't really need it

Art (8)

6		Because of the teaching - too relaxed
7		Although I feel I am progressing satisfactorily, I don't feel I should have taken art as far as A level
3	6	Boring, unenjoyable. Don't like the teachers - they have no time for you
8		To do maths
1	2	I find the work difficult and very time consuming
3		Boring in the extreme
7		Art history is too much
7		Wanted to do Law A level, but it didn't fit in timetable, so I did art

* This student gave the same reason for not doing physics, chemistry and maths

\+ This student gave the same reason for not doing chemistry and biology

Appendix six The distribution of "leavers" between the various types of institution

	Institution number	Original number of students in study	Number leaving prior to examination N	(%)
Schools	1	13	0	0.0
	2	32	5	15.6
	3	32	8	25.0
	4	26	5	19.2
	5	44	6	13.6
	6	10	1	10.0
	7	15	Not known	
	8	22	3	13.6
	9	39	2	5.1
	10	47	15	31.9
	11	34	5	14.7
	12	66	14	21.2
	13	69	5	7.2
	14	75	7	9.3
	15	120	1	0.8
	16	58	13	22.4
		702	**90**	**12.8**
Sixth Form Colleges	17	298	24	8.1
	18	65	17	26.2
	19	70	7	10.0
	20	33	12	36.4
	21	31	3	9.7
		497	**63**	**12.7**
Tertiary Colleges	22	173	23	13.3
	23	88	11	12.5
		261	**34**	**13.0**
FE Colleges	24	49	8	16.3
	25	11	9	81.8
	26	49	10	20.4
		109	**27**	**24.8**
Grand Totals		**1569**	**214**	**13.6**

Pearson correlation coefficients for all items of the "Perspectives" questionnaire on Occasion 1

Perspectives	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
01	—	.31	.07	-.07	-.02	.06	-.11	-.22	-.16	-.21	.09	-.14	-.17	-.20	.30	-.21	-.19	-.22	.09	.06
02		—	.06	.04	-.10	.04	-.05	-.60	-.38	-.27	.08	-.16	-.19	-.15	.18	-.23	-.24	-.18	.02	.14
03			—	.17	.27	.18	-.01	-.03	-.02	-.02	.14	.02	-.12	-.11	.05	-.13	.11	-.12	.01	.18
04				—	.01	.07	.04	-.01	.02	.18	.15	.18	.07	.05	-.01	.03	.28	.04	-.04	-.02
05					—	.24	.16	.06	.12	-.05	.19	-.01	-.02	-.01	.06	-.05	.12	-.01	.01	.08
06						—	.15	-.07	-.02	-.07	.17	-.00	-.04	-.08	.04	-.14	.08	-.02	.03	.04
07							—	.05	.17	.09	-.00	.05	.13	.12	-.07	.08	.15	.08	.07	-.00
08								—	.38	.29	.02	.13	.20	.21	-.18	.24	.22	.19	-.06	-.09
09									—	.32	-.01	.11	.21	.19	-.18	.21	.29	.22	.04	-.05
10										—	.02	.25	.28	.25	-.22	.33	.33	.23	-.08	-.14
11											—	.10	.04	.08	.19	.01	.10	-.04	.02	.04
12												—	.20	.20	-.05	.32	.23	.19	-.08	-.02
13													—	.48	-.14	.28	.22	.27	.02	-.17
14														—	-.16	.33	.25	.23	-.07	-.10
15															—	-.19	-.10	-.13	.12	.05
16																—	.19	.31	-.04	-.05
17																	—	.21	.01	-.09
18																		—	.03	.00
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Perspectives	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
01		.06	-.01	-.06	.02	-.09	.01	-.07	-.17	.02	-.09	-.06	-.09	.02	-.12	-.06	.10	-.14	.10	-.14	.02
02		.12	-.09	-.16	-.06	-.21	.07	-.11	-.16	-.07	-.12	-.17	-.20	.05	-.15	-.08	.38	-.24	.20	-.24	.00
03		.17	.06	.04	-.04	.04	-.01	-02	.00	-.04	-.00	.09	.05	.12	.11	.02	.04	.05	.07	-.07	.14
04		.04	.07	.05	.05	.03	.17	.21	.16	.04	.07	.13	.05	.19	.07	.07	.01	.07	.04	-.06	.11
05		.05	.12	.07	.04	.12	-.03	.02	.02	.05	.03	.09	.10	.06	.12	.08	-.08	.11	-.07	.04	.11
06		.03	.10	.05	.04	-.01	.00	-.01	-.02	-.04	-.02	.02	-.01	.08	.06	.02	.02	.02	-.01	.02	.03
07		-.00	.05	.10	.06	.10	-.02	.11	.12	.08	.07	.08	.15	.02	.10	.08	-.06	.11	.01	.07	.04
08		-.12	.05	.13	.05	.15	-.03	.12	.19	.10	.11	.21	.18	-.05	.14	.10	-.36	.24	-.19	.26	.08
09		-.08	.07	.03	.08	.20	-.06	.13	.23	.07	.14	.17	.19	-.03	.17	.19	-.27	.27	-.10	.22	.02
10		-.06	.03	.07	.04	.13	-.02	.20	.21	.10	.10	.13	.14	.04	.14	.13	-.16	.27	-.11	.14	.02
11		.02	.08	.01	.09	.02	.06	.06	.06	.29	.04	.09	.02	.29	.16	.03	-.03	.09	-.05	.05	.05
12		-.03	.02	.02	.00	.06	.08	.15	.18	.06	.07	.07	.04	.10	.14	.10	-.14	.12	-.11	.06	.03
13		-.12	.07	.03	.18	.20	-.04	.16	.20	.15	.18	.05	.11	.04	.13	.13	-.19	.22	-.09	.19	-.13
14		-.04	.05	.08	.13	.17	.01	.20	.21	.13	.14	.09	.09	.04	.14	.13	-.10	.27	-.14	.17	-.09
15		.01	.01	.01	.03	-.10	.04	.04	-.04	.11	.00	.00	.00	.01	.02	-.01	.13	-.09	.07	-.12	.09
16		-.11	-.04	-.01	.05	.10	.07	.13	.19	.08	.12	.04	.07	-.05	.09	.08	-.12	.24	-.14	.14	-.11
17		.00	.12	.16	.13	.24	-.03	.30	.38	.14	.24	.36	.33	.06	.17	.13	-.17	.21	-.11	.09	.01
18		.01	.03	.02	.04	.04	.05	.04	.15	-.02	.09	.05	.09	-.01	.13	.09	-.13	.14	-.06	.12	-.08
19		.10	.09	.04	.08	.05	.03	.07	.00	.04	.01	.02	.08	.08	.06	.07	-.01	.02	.06	.03	.04
20		.42	.04	.08	-.22	-.05	.07	-.01	-.09	-.07	-.07	-.04	-.04	.02	.02	-.03	.12	-.08	.11	-.10	.12
21		—	.15	.13	-.09	-.05	.05	-.01	-.02	-.02	.02	-.05	.03	.03	.01	-.01	.07	-.05	.10	-.08	.11
22			—	.34	.13	.30	-.12	.11	.11	.05	.11	.13	.16	.06	.16	.18	-.08	.13	-.05	.07	.05
23				—	.10	.26	-.07	.13	.15	.07	.14	.15	.13	.02	.16	.03	-.08	.05	-.11	.15	.05
24					—	.24	-.00	.12	.13	.12	.12	.07	.08	.06	.07	.13	-.09	.10	-.06	.13	-.04
25						—	-.09	.18	.23	.14	.22	.20	.16	.06	.16	.14	-.17	.22	-.07	.20	.07
26							—	.10	.05	-.04	-.02	.01	.00	.11	-.06	-.03	.10	-.01	.12	-.12	.13
27								—	.39	.14	.21	.23	.38	.08	.17	.14	-.08	.19	-.07	.11	-.02
28									—	.23	.38	.31	.37	.09	.15	.15	-.12	.30	-.04	.15	.07
29										—	.22	.18	.13	.15	.05	.07	-.07	.12	-.07	.16	-.01
30											—	.28	.27	.08	.18	.11	-.14	.24	-.04	.19	.07
31												—	.38	.14	.18	.19	-.13	.25	-.08	18	.08
32													—	.02	.24	.16	-.16	.15	-.05	.15	.02
33														—	.13	.10	.01	.11	.09	.03	.05
34															—	.30	-.20	.27	-.14	.19	.07
35																—	-.21	.36	-.16	.17	.05
36																	—	-.23	.26	-.29	.05
37																		—	-.18	.25	.04
38																			—	-.26	.05
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Appendix seven (continued)

Perspectives	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
01		.02	.03	.09	-.08	-.12	.02	.06	.03	-.13	.13	.11	.02	-.05	.10	-.09
02		.16	.08	.26	-.06	-.15	.01	-.00	.02	-.19	.15	.21	.16	-.16	.16	-.25
03		.03	.08	.09	.03	.07	.03	.01	.05	-.01	-.02	.07	.03	.07	.06	-.04
04		.03	.03	.11	.08	.07	.18	.08	.07	-.04	.07	.06	.12	.07	.18	-.04
05		.01	-.01	-.11	.01	.01	.08	-.00	.04	.09	-.09	-.05	-.01	.10	.01	.03
06		.16	.03	.05	-.05	-.00	-.02	.04	.05	.02	.06	.07	-.03	-.05	.12	.04
07		.02	-.02	-.10	.05	.03	.05	-.01	.01	.03	-.10	-.02	.02	.02	.01	.05
08		-.12	-.04	-.25	.08	.15	.04	.00	.04	.21	-.17	-.20	-.08	.22	-.23	.19
09		-.05	-.01	-.23	.15	.25	.10	-.04	.06	.13	-.10	-.19	-.00	.17	-.10	.11
10		-.08	-.00	-.09	.10	.20	.07	-.05	.01	.10	-.08	-.10	-.02	.14	-.11	.18
11		.15	.02	.00	.06	.07	.14	.11	.15	.03	.04	.07	.11	.07	.16	.11
12		-.04	.02	-.07	.09	.09	.07	.01	.13	.12	-.02	-.01	.01	.12	-.11	.08
13		-.02	.06	-.11	.10	.25	.12	.04	.10	.14	-.02	-.07	.03	.10	-.07	.24
14		-.03	.02	-.11	.08	.23	.11	.03	.11	.15	-.04	-.06	.09	.18	-.09	.17
15		.02	.04	.07	-.07	-.04	-.03	.05	.09	-.06	.13	.09	.06	.12	.09	-.04
16		-.17	-.01	-.08	.09	.19	.12	-.04	-.01	.14	-.08	-.09	-.00	.20	-.21	.17
17		-.01	.03	-.14	.08	.19	.11	.01	.07	.13	-.07	-.05	.04	.18	-.05	.14
18		-.05	.02	-.18	.06	.17	.08	-.05	.04	.12	-.06	-.11	.01	.07	-.08	.07
19		.11	.08	-.01	.03	.05	.06	.10	.05	.00	.09	-.02	.06	.06	.13	.08
20		.11	.12	.03	.01	-.08	.03	-.06	-.01	.02	-.06	.06	.06	.04	.09	-.07
21		.09	.10	.03	.05	-.07	.07	.00	-.06	-.04	-.03	.06	.06	.07	.06	-.07
22		.13	.09	-.05	.06	.10	.09	-.01	.05	.06	.01	-.03	-.02	.04	.13	.06
23		.06	.02	-.05	.03	.01	-.03	.04	.06	.05	-.05	-.11	-.06	.03	.04	.10
24		.01	.04	-.01	.06	.20	.02	.14	.11	.02	.05	-.04	-.05	.00	.07	.17
25		-.04	-.02	-.10	.09	.17	.11	.06	.03	.06	-.03	-.11	-.05	.07	.06	.23
26		.02	.05	.05	.10	.01	.11	.00	.03	.02	.01	.10	.06	.04	.02	-.01
27		-.08	.02	-.08	.09	.12	.16	.00	.08	.12	-.07	-.02	.00	.14	-.02	.15
28		-.09	.05	-.08	.21	.21	.26	.05	.09	.17	-.04	-.00	.03	.16	-.02	.19
29		-.01	.05	-.03	.09	.10	.16	.15	.17	.13	.02	.04	.08	.08	.07	.19
30		-.03	.08	-.07	.19	.15	.18	.00	.10	.07	.03	-.05	.02	.13	-.04	.16
31		-.05	.05	-.10	.18	.16	.16	-.01	.02	.13	-.12	-.12	-.04	.19	-.05	.07
32		-.03	.02	-.20	.13	.12	.12	-.06	.02	.19	-.19	-.08	-.04	.19	-.08	.12
33		.11	.06	.09	.14	.08	.17	.12	.15	-.03	.17	.15	.06	.03	.15	.02
34		.06	-.01	-.04	.15	.14	.09	.03	.11	.11	-.06	-.15	-.03	.14	-.02	.13
35		.07	.06	-.16	.11	.18	.07	.10	.09	.12	-.00	-.10	-.02	.13	.02	.17
36		.04	.05	.28	-.07	-.14	-.06	.03	-.04	-.12	.22	.27	.07	-.12	.11	-.20
37		.07	.04	-.16	.24	.35	.22	.04	.07	.22	-.03	-.11	.04	.29	-.11	.22
38		.03	.04	.32	-.03	.00	.03	.00	-.09	-.10	.14	.30	.09	-.05	.13	-.11
39		.03	.07	-.21	.13	.18	.07	-.01	.09	.25	-.14	-.23	-.14	.13	-.09	.27
40		.04	.12	.02	.21	-.04	.09	-.04	-.03	.01	.02	.01	.06	.09	.07	.02
41		—	.12	.10	-.06	-.04	.02	.09	.11	-.07	.06	.08	.11	-.11	.20	-.06
42			—	.07	.05	.04	.07	.06	.08	-.01	.05	.07	.06	.07	.07	.02
43				—	-.04	-.07	.01	.10	.01	-.18	.21	.36	.12	-.07	.21	-.15
44					—	.24	.45	-.04	.01	.15	-.02	-.07	-.01	.29	-.04	.10
45						—	.22	.10	.07	.16	.02	-.05	.05	.16	-.04	.21
46							—	.03	.05	.09	.02	-.01	.02	.29	.07	.07
47								—	.28	-.09	.16	.06	.13	-.06	.18	.10
48									—	.02	.15	-.01	.04	.01	.13	.13
49										—	-.14	-.11	-.06	.19	-.14	.19
50											—	.24	.12	-.05	.18	.01
51												—	.27	-.02	.18	-.11
52													—	.10	.12	-.06
53														—	-.11	.10
54															—	-.04
55																—

Appendix seven (continued)